Pests

1939
JANUARY
VOL. 7 NO. 1

ORGAN OF THE PEST CONTROL INDUSTRY

Exterminators
Fumigators
Termite Control Operators
Entomologists
Insecticide and Supply Mfgrs.

WITH Cyanegg* and the cyanide generator you can do an effective job quickly. The HCN gas generated is thoroughly effective on all stages of pest development. Too, Cyanegg and the cyanide generator assure a profitable, economical job for you every time. Here's why. Cyanegg is low in first cost, the most economical source of HCN. You use, and have to charge, only one simple piece of equipment. You control the fumigation, from the outside, giving definite safety advantages. Just as soon as you've applied the HCN, the apparatus can be quickly cleaned and is ready to use immediately at your next job.

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THE CYANIDE GENERATOR . . . charged, operated, and controlled outside the premises, is available in two sizes: No. 10, for charges up to 10 pounds CYANEGG, generating up to 5 pounds of HCN gas (sufficient for fumigating up to 10,000 cubic feet); and No. 25, for charges up to 25 pounds CYANEGG generating up to 12½ pounds of HCN gas (sufficient for fumigating up to 25,000 cubic feet).

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Head Your Sales Curve Up in 1939

"It would be difficult to find any industry that has made as much progress as the Pest Control Industry throughout the past five years." . . . *Quotation from Official Program, the National Pest Control of Sixth Annual Convention Association held at Omaha recently.*

300 Representatives from pest control firms, manufacturers and supply houses who were in attendance at Omaha attest to the growing importance of this live industry. Talks were made, papers read, and clinics were led by some **24** Government and University Entomologists.

55 Individual Advertisers, listed below, favored "PESTS" with business during 1938. Concrete recognition of the business potentialtities of the pest control field. Because of its basic nature (we never heard of a termite or a rodent that was bothered by a business recession—for in good times or bad they keep on raising their families anyway—and *what* families) it is not likely to be affected adversely.

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If you want to get further acquainted with the sales avenues inherent in the only monthly trade paper which devotes its entire editorial contents to the daily problems of the pest control industry, write

PESTS • **512 East 14th St.,** • **KANSAS CITY, MO.**

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Pests

ORGAN OF THE PEST CONTROL INDUSTRY

Exterminators, Fumigators, Termite Control Operators, Entomologists, Insecticide and Supply Manufacturers

COOPERATING WITH NATIONAL PEST CONTROL ASSOCIATION

AL COSSETTA, *Editor*
J. W. SMITH, *Associate Editor*

MAX ROSENTHAL, *National Advertising Rep.*
128 Lexington Ave., N. Y. City, Phone Mu. 4-9000

PUBLICATION OFFICE, 512 EAST 14th ST., KANSAS CITY, MO.

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Three classes of membership: Active, Associated and Allied. ACTIVE MEMBERSHIP includes all firms engaged in any type of Pest Control operations (general extermination, fumigation, termite control, moth proofing) and dues are $10.00 per year. ASSOCIATE MEMBERSHIP includes branch offices of Active members and yearly dues are $7.50. ALLIED MEMBERSHIP includes manufacturers and supply houses.

STATEMENT

The National Association appreciates the co-operation given by way of publicity. The Association is not responsible for articles published unless credited to the Association. The list of officers and directors is published for informational purposes only.

For further details, communicate with

WILLIAM O. BUETTNER, Secretary
3019 Fort Hamilton Parkway Brooklyn, New York

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"Contributed articles in this publication do not necessarily reflect the opinions of the editors. The editors invite discussions, comments and all types of literary material pertaining to pest control and pests from any person interested in the advancement of the field."

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EDITORIAL

Greetings

THERE are many expressions of this holiday season reaching our desk for which we are truly thankful and appreciative. However it is impossible to acknowledge each one and we are taking this means of extending to all, our sincere wish for—Good Health—Good Luck—Good Cheer—and a Real Happy New Year.

Our Appreciation

ANOTHER year completed—a new year begun. With this issue Pests enters its seventh year as the mouthpiece of the industry, and we pause with a feeling of appreciation and thankfulness for the friendly cooperative spirit manifested by our friends and business contacts. At this time of the year we believe it to be especially appropriate to express our appreciation in this public way for the friendly cooperation so frequently manifested. We feel deeply indebted to each one who has aided in the successful year just completed.

We have plenty of evidence that PESTS is fulfilling its mission—the increased advertising, subscription list, and inquiries that come to us, as well as the voluble comments from satisfied readers by word of mouth and in our mail. For this we are very pleased and grateful.

1939 is a new year, full of opportunity and possibilities. PESTS faces the new year with a deep sense of its obligation to its readers and voices its pledge to give the industry a better magazine than ever. We believe we have succeeded in this purpose the past year. Many forward strides will have been noted, perhaps the greatest of these being the change in name. This involved no little fortitude inasmuch as quite a few felt it was not best. With the passing of the months, and as time goes on we are sure that these few will be won to the enthusiasm of those favoring the change.

PESTS faces the new year with greater confidence than ever in the industry—confidence in the National Association—in the officer personnel—and in the mission of our magazine. It is a new year, untouched by failure or mistake, full of opportunities and possibilities. Let's make the most of it.

May 1939 bring real prosperity and happiness to all.

A Much Needed Book

WE ARE informed that Dr. Hugo Hartnack of Chicago has gone to press with a book that should appear the early part of 1939. The title of this book is "202 Common Household Pests of the United States."

We understand that this book will contain some 330 pages, 5¼" x 7½", and included therein will be 220 pictures. Dr. Hartnack mentions that there will be discussed rats, mice, and all the major household pests, and a large number of the minor pests, with which we come in contact as an industry. This book, says Dr. Hartnack, will stress particularly the biology of the pests, and will make suggestions as to treatments, but not provide any formulae. Dr. Hartnack has been working on this book for quite some time, and if the book is all that it is indicated it will be, there is no question but that it will be a valuable acquisition to the library of every pest control operator.

The book is to be distributed through book stores, but unfortunately, no price has been set, nor is Dr. Hartnack ready to accept any orders.

Should We Sell Price?

WILL the pest control operators ever wake up? We will concede at the outset that price is something that any purchaser must take into consideration. On the other hand, pest control operators should not attempt to sell their services as if it were a common article. Let us stop wasting time in answering "slick" questions that are put to us by purchasing agents or prospective clients that deal with efforts to have us justify our prices with those which may be considerably lower. This is nothing more or less in ninety per cent of the cases, to have our estimates made lower.

Stop looking at the pest control industry from the standpoint of "Price Selling." There will always be those in the industry who will estimate low and by the same token, the cost analysis will show that work cannot be done at the figure that is quoted; that is, it cannot be done honestly. The wide-awake pest control operator pays no attention to what the "cut-throat" artists are offering by way of prices but will proceed to sell something that is far more important.

In the main we have one story to get across to our prospect and that is to sell him a SERVICE. This service can only be reflected in one way—Intelligent technique with full regard for safety and its corollary "Satisfactory Performance" in the elimination and control of pests.

Those selling "Price" will hurt for a short time but those who sell "Service" continue in business. It might be well to investigate what laws exist in your cities and states relative to selling below cost. Make your aims from now on to sell SERVICE and not PRICE.

Cost Analysis

MORE or less in sequence with the other editorial of this issue entitled "Should We Sell Price?" there is an interesting reference to the general subject of cost analysis in the California Pest Control Association Monthly Bulletin. There is no question whatsoever as to records being rather inefficiently kept by many pest control operators throughout the country. We probably will be severely criticised in making the statement to the effect that comparatively few firms are rated by Dun and Bradstreet. There may be reasons for this, but one cannot side-step what appears to be the fact, and those are mainly summarized in terms of the lack of detailed record. For over three years, the National Pest Control Association, through a committee, has been making a study of cost analysis. The reluctance with which many in the industry cooperate as thoroughly as they should is a sad reflection on the pest control industry.

'Pests" takes pleasure in quoting verbatim from the December issue of the California Bulletin, and urges that all firms take sufficient time out to make a detailed study of the entire year of 1938, and allocate their expenses along some of the classifications that are offered as a measuring stick. We readily realize that the size of the firm very largely determines the use of all of these classifications, and at times, an individual operator might desire to group one or more of the headings that are suggested. At any rate, we submit the list of the most important items of expenses that should be considered in this allocated statement in the breakdown of the moneys that have been expended during the year.

"1. **Termite Control:** Building permit, chemicals, compensation insurance, cement, gravel and sand, hauling charges, hardware, inspection time, mechanic labor, common labor, overhead labor and supervision, lumber, light and power, millwork, plastering, painting and touching-up, plumbing, national social security tax on labor, state unemployment tax on labor, sales tax, selling costs and commissions, and general overhead expenses (covering advertising, printing, postage, bad accounts, legal expenses, estimating time, defective work, freight, licenses, personal salaries, office help, bookkeeping costs, charities, premium on bonds and insurance), liabilitity, property damage, compensation and accident, etc., which averages approximately 25% to 30% of all other costs mentioned above, and last but not least, a reasonable profit.

"2. **Fumigation:** Material used, labor, selling cost, auto expenses or transportation, insurance (compensation, liability, and property damage), taxes, permits, tapes, protective paper, damages and losses, legal expenses, social security tax, unemployment tax, sales tax, re-fumigation, and general overhead expenses (see list covered under Termite Control), and a reasonable profit.

"3. **General Pest Service:** Material used, labor, selling costs, auto expenses or transportation, insurance (compensation, liability, and property damage), taxes, permits, bad accounts, losses, complaint calls, legal expenses, social security tax, state unemployment tax, sales tax, and general overhead expenses (see list covered under Termite Control), and a reasonable profit."

(Continued on page 5)

A detailed questionnaire form was provided sometime back by the National Association which would allow for the above figures to be reduced in terms of percentages. Obviously the purpose in asking for percentages was to cause no embarrassment in the sense that no one would be giving their actual figures. "Pests" urges that the industry cooperate in the laudable efforts being put forth to build up a guide on cost analyses.

Let Us Conduct Ourselves to Merit More of These Comments

THE unfortunate thing is that altogether too many entomologists and governmental officials only hear about the unpleasant things. The public communicates with entomologists and governmental officials mainly to complain or at other times even distorts the facts when seeking information. It is becoming more generally felt and known that the firms comprising the membership of the National Pest Control Association desire to follow their Code of Ethics. Let us reprint the code:

"NATIONAL PEST CONTROL ASSOCIATION, INC.

"The membership shall observe the following Code of Ethics:

"RELATION OF MEMBER TO PUBLIC

"The Member in his advertisements or other solicitations of business shall not use tricky, fraudulent, or misleading wording or methods.

"RELATION OF MEMBER TO CLIENT

"The Member shall thoroughly analyse the requirements of his clients and shall conscientiously recommend the means best suited for the clients needs.

"PROFESSIONAL SERVICES

"The Member upon accepting a contract or service agreement shall render skilled, intelligent, and conscientious service.

"RELATION OF MEMBER TO COMPETITOR

"The Member shall not publicly criticize the business or private affairs of a competitor.

"RELATION OF MEMBER TO ASSOCIATION

"The Member shall be loyal to the principles of his Association and active in its advancement."

The Pest Control industry will be pleased to read two of several similar comments received in recent correspondence.

"I was very glad to attend the Omaha meeting of the National Pest Control Association although my plans to go were only made at the last minute and I was somewhat rushed. The fine attitude of the Association toward scientific work and toward the ethical aspects of their own work was an eye opener for me. Previous experiences had prepared me for the opposite state of affairs."

"The meeting in Omaha was the first convention of your association that I have had the pleasure of attending, and I can truthfully say that I very much enjoyed being present, and the contact with your members was of considerable interest and value to me."

THE INDEX

The early part of 1938, in the January issue, there was printed a summary or Index of all major articles that were published in this magazine (then called The Exterminators Log) from 1933 through 1937. In the February issue was printed the Index of all leading editorials that were published in the same period. This feature has proved so helpful and so many have been the complimentary remarks about such Index forming an easy reference, that we are offering the combined Index of both feature articles and editorials that have been published throughout the entire year of 1938.

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Purdue Conference to be Held January 16–20

FOR THE third successive year, Purdue University will entertain pest control operators for five days, from January 16 to 20. This Third Annual Pest Control Operators' Conference affords an opportunity for all pest control operators to attend as well as to gain from a carefully prepared program much that will be of direct benefit in the daily operations of a pest control firm. The detailed program which is made a part of this article speaks for itself. Merely a casual glance at the program will bring clearly to one's consciousness the worthwhileness of attendance.

Prof. J. J. Davis, who is in direct charge of the Purdue conference course, has provided a program that will not only be valuable to those who have attended the two previous conferences, but also for those who are attending the conference for the first time. The entire first day is given over to a review, and a comprehensive summary of the highlights of the previous conferences. Insect identification will be given a prominent part, as will also the more practical information that is reflected in such parts of the program as the actual mixing of baits, and analysis of a typical termite job. Discussion and exchange of ideas will play an important part as usual.

The National Pest Control Association is cooperating with Prof. Davis in the details. The general invitational letter has been sent to over 1000 firms. There was included a questionnaire registration form, so as to permit all to take advantage of this course. If any reader of this article has not received such letter, it is suggested that he communicate immediately with the Secretary of the National Association at 3019 Fort Hamilton Parkway, Brooklyn, New York, and the necessary form will be sent immediately. The registration fee is $2.00. The course is open to all commercial pest control operators.

No special arrangements have been made with regard to group-travel, so that each one attending the conference will travel as he chooses. A recent communication from the Pennsylvania Railroad suggests its fast DeLuxe service with a change at Indianapolis. From New York City there are two convenient trains leaving at 5:10 p. m., or 8:35 p. m., respectively, and arriving at Indianapolis, 8:09 a. m., or 12:14 p. m., the following day. The connections for these two trains from Indianapolis over the Big Four route, are 10:20 a. m. and 2:25 p. m., arriving at Lafayette at 11:33 a. m., or 3:46 p. m., respectively. If there are a sufficient number in the party, the Pennsylvania Railroad will operate through cars from New York to Lafayette. Both of these trains make connections at other cities, and the local office of the Pennsylvania Railroad will be glad to give further details. To give some idea of the costs of transportation, we will merely quote the fare between New York and Lafayette: Those travelling by coaches only would pay $21.27. Those travelling in Pullman cars, when accompanied by Pullman tickets for the space occupied, the fare would be $25.55. Lower berth, New York to Indianapolis is $6.30, and upper berth, New York to Indianapolis, is $4.80. There are, of course, convenient connections from Chicago and other cities.

It is urged that reservations be made **early** at any of the following hotels:

Purdue Memorial Union: Single $2.50; double $4.00; double with twin beds, $5.00; all with bath.

Fowler Hotel: Single without bath, $1.75 and $2.00; with bath $2.50, $2.75 and $3.00; double without bath $3.00 and $3.50; with bath $4.00 and $6.00:

Lahr Hotel: Single without bath $1.25 and $1.50; with bath $2.00 and $2.50; double without bath $2.00 and $2.50; with bath $3.00, $3.50 and $4.00.

The detailed program is as follows:

PROGRAM

Third Annual Pest Control Operators Conference

Purdue University, Lafayette, Indiana
January 16-20, 1939

Monday 8:00-12:00 A. M.

Registration, Agricultural Building, Room 102.

Monday 9:00-12:00 A. M.

Agricultural Building, Room 103

The Third Annual Conference—Our Problems—J. J. Davis, Purdue.

The Life History and Habits of Insects; Their Relation to Control—H. O. Deay, Purdue.

Structural Characteristics of Insects; Their Relation to Control and Identification—B. E. Montgomery, Purdue.

A Word of Welcome—Acting Dean V. C. Freeman, Purdue.

Monday 1:30-4:30 P. M.

Agricultural Building, Room 103

Fundamentals of Insect Control—J. J. Davis, Purdue.

Fundamentals of Chemistry as they Apply to Insecticides—Prof F. J. Allen, Purdue.

Contacts and Publications of Value to the Pest Control Operator—G. E. Lehker, Purdue.

Monday 7:30 P. M.

Union Building, Tower Room

Moving Pictures—In Charge, G. E. Gould, Purdue.

Tuesday 9:00-12:00 A. M.

Agricultural Building, Room 103

Natural Habits and History of Rats and Mice—F. E. Garlough, U. S. Biological Survey.

Demonstration in Preparation of Rat Baits—G. C. Oderkirk, U. S. Biological Survey; E. F. Sennewald, St. Louis, Mo.

Questions and Answers Clinic on Rat and Mouse Control—F. E. Garlough and G. C. Oderkirk, U. S. Biological Survey; E. F. Sennewald, St. Louis, and Walter McCloud, Chicago.

Tuesday 12:00 Noon

Group Photograph—Agricultural Building.

Tuesday 1:30-4:30 P. M.

Agricultural Building, Room 201

The Classification and Identification of Insect Adults—H. O. Deay, Purdue.

Tuesday 7:30 P. M.

Purdue Memorial Union Building
Tower Room

The Fundamentals of Building Construction—A. H. Carter, Purdue.

Wednesday 9:00-12:00 A. M.

Agricultural Building, Room 103

Problems Arising in Relation to Household Fumigation—J. L. Horsfall, New York, N. Y.

Hazards in Household Fumigation—I. L. Ressler, Wilmington, Del.

Demonstration on Use of Gas Masks and Other Precautionary Measures—Chas. Herbert, Vincennes, Ind.

Methods of Rearing Insects—Prof. F. L. Campbell, Columbus, Ohio.

Wednesday 1:30-4:30 P. M.

Agricultural Building, Room 201

Identification of Immature Stages of Insects—H. O. Deay, Purdue.

Characteristic Injuries by Wood-Infesting Insects—Dr. Thos. E. Snyder, U. S. Bureau of Entomology and Plant Quarantine.

New and Useful Chemical Insecticides Made from Derris Resins and Rotenone—H. E. Whitmire, St. Louis, Mo.

Wednesday 7:30 P. M.

Purdue Memorial Union, Faculty Lounge

Moving Pictures and Round Table Discussion.

Thursday 9:00-12:00 A. M.

Agricultural Building, Room 103

Basic Formulae—Geo. L. Hockenyos, Springfield, Ill.

How to Mix Insecticides—Charles Denny, St. Louis, Mo.

Cockroaches—Life Histories and Habits of the Common Household Species and their Control, with Demonstration on Mixing and Applying Controls—G. E. Gould, Purdue.

Thursday 1:30-4:30 P. M.

Agricultural Building, Room 103

Wetting Agents and Penetrants for Mothproofing Solutions—H. E. Jennings.

Clinic on Clothes Mothes and Carpet Beetles—E. A. Back, U. S. Bureau of Entomology and Plant Quarantine.

Ants—Their Identification and Control—W. E. McCauley, University of Illinois.

Thursday 6:30 P. M.

Purdue Memorial Union Building
Ball Room

Banquet—President Edward C. Elliott, Toastmaster.

Friday 9:00-12:00 A. M.

Agricultural Building, Assembly Room

The Termite Problem:

Building Construction and Treatment—A Demonstration—Dr. Thos. E. Snyder, U. S. Bureau of Entomology and Plant Quarantine.

Diagnosing the Job—G. L. Hockenyos, Springfield, Ill.

Standardized Technique for Soil Treatment Tests Against Subterranean Termites—W. E. McCauley, University of Illinois.

Procedure, Hazards and Precautions in Termite Control—W. B. Hill, Memphis, Tenn.

Questions and Answers—Dr. Thos E. Snyder, W. B. Hill, G. L. Hockenyos, W. E. McCauley.

Friday 1:30-4:30 P. M.

The Psocid Problem—E. A. Back, U. S. Bureau of Entomology and Plant Quarantine.

Experiences with Unusual Insects and Unusual Insect Situations.

1. R. M. Adams, Cincinnati, Ohio.
2. W. P. Flint, University of Illinois.
3. H. L. Brown, Bloomington, Illinois.
4. William O. Buettner, Brooklyn, N. Y.
5. D. H. Lewis, Buffalo, N. Y.
6. T. C. Raley, St. Louis, Mo.
7. J. H. Sturgeon, Louisville, Ky.

There will be added other names as questionnaires provide information that should include others to take part.

P. C. O. by Fast Thinking Rescues Drowning Boy

From the standpoint of a human interest story, it is interesting to repeat a published newspaper article that plays up an exterminator who put to use some of the first aid lessons that become a part of the exterminator's knowledge, in view of the type of work he does. Patrick Pine is an employee of the Smithereen Company of Chicago, Illnois. The interesting account reads:

"Louis Seiden, 4 years old, was playing yesterday with several children in the areaway behind his parents' apartment at 7810 Kingston avenue. In childish curiosity one of the boys pried open the lid of a catch basin.

A few seconds later there was a scream. Louis had fallen head first through the opening, plunging five feet down the shaft into the muddy water and silt at the bottom.

Mother Tries to Jump.

His mother, Mrs. Dorothy Seiden, ran from their first floor apartment. Terrified, she tried to jump after her son. She was pushed away from the narrow opening by Patrick Pine, 3517 South Seeley avenue, **an exterminator** at work in the building, who dashed to the rear when he heard the screaming.

Looking down the shaft, Pine could see nothing but the boy's small shoes above the dark surface of the muck, which was four feet deep.

"Hold my feet!" Pine shouted to a group of men who had gathered. He stripped off his jacket. Without this covering, Pine, a slim man, figured he could slide down into the basin.

Two Hold His Legs.

William Mangan, 6159 Eberhart avenue, a carpenter contractor, grasped one of Pine's legs. Mangan's assistant seized the other. Then they lowered Pine into the shaft, as he shouted muffled directions.

Pine took a firm hold of the boy's shoes on reaching the bottom. Then the two men pulled Pine and the boy to safety. It had been just two minutes since Louis fell into the well.

Pine rolled the boy on the ground, shaking him to get the water out of his lungs, and then applying artificial respiration. In five minutes Louis regained consciousness. He was safe in bed, with his mother's arms around him, when policemen arrived.

Questions on Subterranean Termites and Their Control Answered

By **DR. THOS. E. SNYDER,** ***Senior Entomologist***
Bureau of Entomology and Plant Quarantine - United States Department of Agriculture
New Orleans, Louisiana

EDITOR'S NOTE: *Rather than presenting a definite address on the subject of Subterranean Termites, Dr. Thos. E. Snyder answered a series of questions that were asked of him at the Sixth Annual Convention of the National Pest Control Association recently held at Omaha, Nebraska, October 24-25-26, 1938. These questions and answers are intended to be of assistance to the professional termite control operators anxious to provide honest workmanship and are made the subject of this special article with copyright privileges reserved by the National Pest Control Association and Pests so as to prevent misuse in terms of advertising propaganda.*

What Are Some Some Early Records of Termite Damage to Buildings in the U. S. and Europe?

TERMITES have always occurred in this country, existing here long before man. They are not spreading geographically, but in many places are attracting greater attention because of their damage to buildings. With the invasion by man of their natural habitat in forest and field, these insects were forced to turn to buildings and the contents of buildings, as cellulose is their natural food. To cite a few instances from literature, in our bibliography on termites we have records of termite damage to buildings as early as 1876 in Massachusetts; 1877 in Missouri; 1893 at Washington, D. C.; 1883 at New York City; Illinois 1893; Ohio 1894; Maryland 1898. Our common subterranean termite (**Reticulitermes flavipes** Kol.) damaged a greenhouse near Vienna in 1837. It caused serious damage to buildings in Southern France as early as 1853.

Records of the occurrence of living termites in North America are even earlier; Lower California 1811; Florida 1839; Pennsylvania 1844; California 1853; New York 1858; Texas 1862, etc.

Are Structural Repairs Necessary?

Ever since 1900, the Bureau of Entomology and Plant Quarantine has recommended essential structural repairs as the most effective permanent method of termite control. In many instances termite damage to the woodwork of buildings is slight; and if the buildings are raised on masonry or pier foundations, as is common in the southern states, all that is necessary is an inspection once or twice a year, the removal of wood debris, and the breaking off of earth-like shelter tubes made by the insects over masonry foundations.

Some structural repair work is necessary in practically all cases where commercial termite-control operators contract to remedy termite damage to buildings; all wood, if in contact with the earth, must be removed or placed upon concrete. While the importance of making structural repairs that are necessary before applying soil or chemical insulation treatments is recognized by the more efficient operators, in general sufficient emphasis is not placed on this vital phase of termite control when the operators are soliciting contracts from the public. Certain reliable firms in New Orleans, will not issue their regular 2 or 3 year guarantee and will insist on a special contract when the house owner refuses to have necessary structural repairs made.

Too much emphasis is placed, by commercial termite control operators, on the chemical-insulation or soil-poisoning phase of control work, whereas it does not merit that much relative importance. They are not honest with themselves or with this Bureau. It is true that often but not always, at least in New Orleans, La., the structural repairs, while recommended by the termite-control operator, are made by a contractor, mason, or carpenter not employed by his firm, and the cost is entirely separate.

The chemical insulation method, however, in general, is still very much in the experimental stage and on the basis of present information cannot be recommended as a permanent remedy; it constitutes a most valuable supplement to structural repairs.

Soil poisons should be heavy treatments with effective chemicals laid down in trenches to a reasonable depth above the footing around all foundation piers and chain walls; the depth of the trench must vary with the depth of the footing.

One of the most puzzling problems encountered in termite control work is the case where wooden floors in buildings are laid directly on the ground. In such cases termites often penetrate through the wooden floors, furred partitions (wooden studs, lath and plaster) and penetrate up through hardwood floors on the second floor of the building. Where the owner, due to expense or impracticability, will not replace the wooden floors in the basement or the ground floor with concrete, and place concrete plinths and baseboards under the furred partitions, we, as well as most termite control operators, have recourse to three methods of procedure. One, refuse to do the work; this is done by responsible operators in some cases. Two, attempt to flood the earth underneath the floor with chemical under pressure by means of boring holes in the flooring. Three, cut through the flooring a foot from the partitions all around the building, put down concrete plinths underneath the partitions after soaking the ground with a soil poison. No reliable termite control operator will give you a full guarantee for this type of work.

Are Metal Termite Shields Effective?

The use of metal termite shields to protect buildings from attack by subterranean termites is not new; they have been used in tropical countries for at least 50 to 100 years. Shields are a part of good construction and standard practice in many countries. They are not an experiment, but of proven worth; we have no records of failure of properly manufactured shields of hard, durable metal, which have been correctly installed.

This Bureau's recommendations are that mechanical barriers composed of non-corrodible metal should be placed over foundation walls, metal chimney barriers installed, and shields placed on vertical piping; 16 ounce copper or 26 gauge galvanized iron are commonly used. This metal termite shield often is unnecessary on well exposed exterior surfaces, but is essential on interior surfaces (partially excavated portions of basements, closed in sunparlors, porches, steps, etc.) where tubes cannot be readily seen and broken off. Where the foundation wall is not solid or tight or capping of the foundation wall is not effective, or the mortar is of a poor grade or disintegrated, a

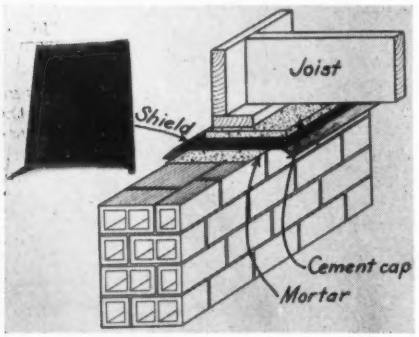

Fig. 1.—Bread pan type of termite shield on a capped hollow tile foundation wall; note that the wall has been further protected by means of a cement cap. The shield extends outward horizontally for 2 inches and is then bent downward at an angle of 45° for 2 inches.

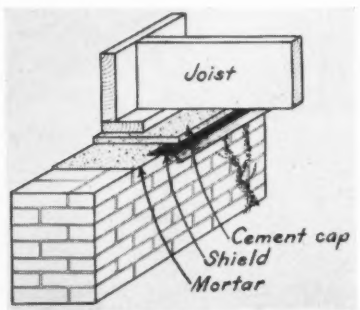

Fig. 2.—Strip type of termite shield on a brick foundation wall that has been further protected by means of a cement cap. The shield extends outward horizontally for 2 inches and is then bent downward at an angle of 45° for 2 inches.

"bread pan" type of shield (Fig. 1) should replace the narrow "strip" type of shield (Fig. 2) and should cover the entire top of the foundation walls. Strip or bread pan shields of galvanized iron can be placed on new buildings in the Gulf States, where buildings are raised up off the ground on piers or chain walls, at a cost of 9 cents per linear foot; on old buildings either type costs 20 cents per linear foot to install. Costs vary in other sections of the country, depending largely on the construction. Shields are not necessary where there is a concrete basement or cellar.

On the Subject of Shielding

What a good many people think is a handicap so many times is with regard to installing shields when properties are already erected, and the result is some feel that the economic factor would almost prohibit the use of the shields in such cases. Yet the specifications so many times call for shielding. Isn't there some way that can be pointed out that it is impractical at times to resort to shielding?

The answer by Dr. Snyder: Well, there are cases where a building is already erected where it is very difficult to install metal termite shields. In some buildings where they can be jacked up it can be done. There are several cases where it has been done in New Orleans. It is generally impractical to jack up and put the shields on a building The upper tier of bricks in a foundation wall can be removed and the shield inserted, and the bricks replaced. It is costly and we are not recommending shields installed on buildings already erected as a general practice.

What Is the Role of Chemical Insulation?

Soil poison tests of basic chemicals as well as combinations of chemicals to protect poles and posts from termites are being conducted by this Bureau on Long Island, N. Y., and at localities near New Orleans, La. No conclusive results have been obtained as yet; however, some new chemicals appear to be promising.

In June, 1937, these tests were supplemented by including the inspection of 50 termite infested buildings treated with five different soil poisons by commercial termite control operators—before treatment, during treatment, and after treatment. In addition, termite infested buildings have been or are being treated, under the direct supervision of officials of the Bureau of Entomology and Plant Quarantine, with nine different soil poisons in 1937-38 and four so far in 1938-39; these are chemicals which have already been proven to be effective or new chemicals that have shown promise in preliminary tests. The data on relative effectiveness and costs of these chemical insulation treatments under service conditions will be of very great value.

In addition this Bureau has records from the office of the Louisiana State Entomologist of the results of the inspections of nearly three thousand termite infested buildings treated by soil poisons by 27 commercial termite control operators from 1934 to 1937.

It is possible that upon the conclusion of these tests that this Bureau's recommendations of certain soil poisons as supplementary treatments to structural repairs may have to be changed or modified.

Great care should be exercised in applying soil poisons, if there is to be no injury to vegetation near the building. Where vegetation is very close to the foundations of the buildings, protection can be obtained where soil poisons are applied by covering the slope of the trench farthest from the building with tarpaper, canvas, etc., to protect the roots of vegetation. As a rule such mechanical protection has proven to be entirely unnecessary in Louisiana.

What Are Guarantees?

It has been our experience that guarantees given house owners by commercial termite control operators, no matter how they are worded, or "dressed up" constitute merely a maintenance service. Insurance and bonds are not necessary in the case of reliable well established pest control firms. In general "high pressure" salesmanship by some firms over-emphasize the value of guarantees, bonds, and insurance.

Are Arsenicals Used in Wood Preservatives or as Poisons in Insulation Boards Harmful?

As yet the Bureau of Entomology and Plant Quarantine has no data to show any reason why the federal specifications (U. S. Treasury Department, TT-W-571a) for wood preservatives should be changed. These specifications stipulate that, where timber must be used in contact with the ground, it should be impregnated with coal-tar creosote; and where it is used above ground and finished or painted after treatment, it should be impregnated with zinc chloride. The Ninth Progress Report on the international termite exposure tests was issued in January, 1938. Additions recently have been made to these tests both in Panama and the Gulf States. It is believed that there is considerable propaganda against the use of arsenicals in wood preservatives or as poisons in insulation boards. In the amounts used for these purposes it is very doubtful that they could be harmful to human beings. In addition, enormous quantities of arsenicals have been handled for years by workmen in the manufacture of wood preservatives, and in plants where they are used as poisons for insulation boards, without any harm to the workmen.

As indicated in publications of this Bureau, but very little chemically impregnated timber need be used in properly constructed buildings in the United States to secure protection from subterranean termites, which cause the principal and most serious structural damage. This treated wood is recommended in the foundations. But foundations of chemically impregnated wood or treated wood over masonry foundations alone, without the termite shield, will not afford protection against termites. They do not form a "shield of treated wood." We have definitely proved by our test buildings in Panama that termites will build their tubes up over treated wood to gain access to untreated woodwork above or untreated material within the building.

How Do Termites Effect Public Health?

Termites infesting the woodwork of buildings do not constitute a health hazard. It is true that the winged adults flying about in buildings are a great annoyance, and are especially irritating to residents who may be nervous or ill. Our native termites cannot bite human beings sufficiently hard to penetrate the skin; while termites in the tropics are able to bite sufficiently hard to draw blood, this is not true of any species in the United States. Winged termites can be swept up in a vacuum cleaner and thus relieve the annoyance that they cause.

What Is Biological Control?

Biological control is the natural control of an insect by the use of parasites or predators. Such control may occur naturally or may be induced by the introduction of parasites or predators by men. This method of control has been successful in the case of certain insects in restricted localities, but in the case of termites, it cannot be relied upon. Termites have no successful parasites or predators.

Parasites — As termites live protected lives, always concealed either in wood or in the earth and as their powers of reproduction are enormous, they have very few effective natural enemies. Unlike most insects, they have no internal insect parasites which help to keep them in check. Fungi, nematodes, and molds, however, cause some loss in termite colonies. Of these enemies, molds appear particularly in the Orient.

The Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture has been receiving requests for information as to the effectiveness of using virus in the control of termites which damage the woodwork of

buildings; these requests have come not only from this country, but from foreign tropical countries where termite damage is serious.

From the information which this Bureau has been able to obtain from correspondents who are cooperating with us in various parts of the world, there has been no virus discovered which will kill termites on a large scale, and the idea of inoculating termites with any organism or virus is absurd. Some professional termite exterminators, especially in tropical countries, use arsenicals in some form or another, meanwhile pretending that they infect these insects with a virus of a disease, although, a disease capable of being used in this way is unknown to science.

Predators — Among predacious animals, ants are the most important enemies of termites. Ants are dominant insects, they possess eyes, and run about on the surface of the ground in the open in full sunlight. The bodies of ants are colored, and are protected by a hard outer shell. For defensive and offensive purposes they have biting jaws, some have stings, and others a formic acid spray.

Ants are the worst enemies of termites, and are responsible for their present hidden life, and have forced termites to dig in for defense and lead an undercover existence, by walling themselves up in earth, earth-like shelter tubes, within wood, or in the tropics in hard nests. Ants destroy many winged termites at the time of colonizing flight.

Termites are not dominant insects, usually they are blind, colorless and soft-bodied. For defensive purposes they have biting jaws, but some tropical termites have a head gland from which is forced for a short distance an acidulous secretion which gums up ants. In other words this method of chemical warfare is much more effective than the jaws in repelling the attacks of ants.

In the tropics armies of ants break into mound nests of termites; the termites retreat into the interior and wall off with nest material, the invading ants; but the ants are usually able to completely or partially take over the nests. Marauding ants eat termites, and raids on termite nests are for the purpose of obtaining food. In the tropics termites and ants can and do live together peacefully in separate parts of the same carton nest, but each insect has its own galleries. If such a nest is broken into by man, however, the ants usually fall upon the termites, which are helpless when exposed. In nature termites have not been exterminated by ants; ants are negligible as a control of termites; usually most kinds of ants cannot get at termites within wood.

Argentine ants are a menace to orchards in our southern states and in California; they also prey on termites. However, they are not a factor to be considered in any plans of men for termite control, either in the United States or in their native home in South America. Argentine ants must be wiped out and nothing in a termite control plan should interfere with state and federal plans for the control of Argentine ants.

In New Orleans, Argentine ants are found in buildings heavily infested with termites. They do not control termites despite the belief that since termite damage has increased it is due to the campaign against Argentine ants, whereas the increase in damage is due to the lowering of the water table by man.

Government Chief Approves Insect Collecting as Hobby

Endorsement for the Science Service article on page 399, on insect collecting as a hobby and as inexpensive summer fun with lasting value, comes from the head of Uncle Sam's insect fighters, Dr. Lee A. Strong, chief of the Bureau of Entomology and Plant Quarantine of the U. S. Department of Agriculture.

Dr. Strong says:

"The hobby of making collections of insects appears to me to be a good one. Although many people recognize that insects play an important part in our welfare, few realize how many kinds there are or how widely they differ in structure and habits.

"Not all of them are pests—many are very beneficial, others are of little known importance to man. Much of the information on the occurrence of this vast number of insects has been assembled through the effort and interest of those who have studied and collected them as a hobby.

"The insects which attack crops and man's possessions cause annual losses which have been estimated as high as $3,000,000,000. Much of this can be prevented by applying control measures now known.

"With more information about insects and fuller realization of the importance of them as pests, it is fair to assume that the tribute now paid because of them will be adjusted to the favor of man and his welfare. The collection and study of them, even as a summer pastime, will contribute towards this end."

Science News Letter

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Fumigants and Gas Masks

By GEORGE L. SETH, *Assistant Manager*
Industrial Department - Mine Safety Appliances Co.

THE modern pest control operator is called upon to handle many and varied chemicals in the daily dispatch of his duties. Since many of them are toxic to human beings, they must be handled with extreme care and every precaution must be taken to assure adequate protection from a respiratory standpoint. The toxicity of a gas in relation to its effect on a person will determine the degree of protection necessary in its use.

Not so very long ago it was rather common to pick up a newspaper and read of the death of persons from fumigating gases. Many of these deaths were needless and, in many instances, included the operator. Most of these were caused by ignorance and, in some cases, negligence. I feel that the strides made by pest control operators in overcoming these difficulties has gone a long way to put the industry on its high operating plane of today. One of the best selling points today for pest control operators is to emphasize "Experience," which in the end means safety to all except the unwanted guests at the ensuing "gas party."

This point of security has not been reached without some sacrifice. It has been necessary, in some instances, to make the use of gas masks and other safety measures by operators, mandatory by ordinance or law.

It is hard to conceive of any man taking a chance with such a sudden form of death as that resulting from Hydrocyanic Acid Gas by attempting to do a job without adequate respiratory protection, but the records of the past indicate the use of such practice.

I would like to dwell on this subject since it is one which is too often taken for granted and certainly brings out the truth of the old adage, "Familiarity Breeds Contempt."

Hydrocyanic Acid Gas is very penetrating; in fact, it can and will penetrate through a brick wall if given sufficient time, and demonstrations have shown that it can penetrate to the center of a sack of flour in six hours sufficiently to kill weevils. Likewise, it will penetrate the skin of man with great rapidity; so much so that this is a serious factor which must be considered in fumigating by HCN.

We receive a number of letters annually just after an unusually hot spell in any section of the country calling to our attention that the canister just used on the particular mask was evidently not as efficient as the ones used previously (during winter and spring).

In the manufacture of thousands of canisters yearly, it is a fact that extreme uniformity exists, and the variation in the service time of canisters varies but slightly when tested against a known concentration of gas at a specific rate of flow. What, then, is the reason for the supposed difference in canister efficiency? In most cases, it is not the fault of the respiratory protection afforded by the mask, but skin absorption of the gas has produced the effect. In hot weather, the pores of the skin are wide open and thus become a quick and sure way for HCN to enter the blood stream through the body. A man may be getting 100% protection from a respiratory standpoint but may be overcome or affected by HCN gas, all of which leads him to state that the canisters are not giving him protection, or not in the same degree afforded previously. The Bureau of Mines in Pittsburgh had several men overcome with HCN in a gas chamber a few years back. It was later definitely established that they were getting 100% protection to the respiratory tract. In hot weather, when perspiring freely, be careful of your exposure time and play safe by taking a little time out at frequent intervals in the fresh air; it will certainly pay.

Sometimes the canister does not give the same service time as on the previous job. In most cases this is not caused by a defect in the canister, but is the result of varying conditions between jobs. A canister will hold just so much gas, and after it has reached its absorptive limit it permits gas to seep through. The amount coming through is very weak at first but gets stronger, thus giving a warning which, if heeded, will enable one to retire safely to fresh air and change the canister.

The service time of a canister is based on two unknown factors, namely the concentration of gas and the breathing rate. Regardless of the attempt to regulate the concentration, the amount actually present also depends on a number of factors, namely the gas-tightness of the building and material present to absorb the gas. If the concentration of gas is high, the service time will be shorter than when the concentration is low, and vice versa. It is the custom of some fumigators to open cans of prepared fumigating materials with the canister opening almost directly over the can. The amount of highly concentrated gas thus liberated directly into the canister opening can be such that three or four breaths may be equal to 15 or 20 minutes, or more, of the concentration encountered in fumigating. If a man breathes faster than another, the canister will afford less service time to him than to a man breathing slowly. We regret that it is impossible to estimate the service time remaining in a used canister. The best practice is to discard the used canister for a fresh one if there is any doubt. Can you afford to endanger a life for the price of a canister?

At this time, I would like to point out that men whose work requires that they wear gas masks give some thought to the type of mask selected. Gas masks, like other things in this world, run pretty true to form with regard to price. By this we mean that you can not get a diamond ring for the price of a glass one.

Another thing to consider is your own protection needs. Do not be misled by seeing somebody do a job with a so-called Cartridge Respirator and come to the conclusion that you can do a job in a high concentration of HCN or other toxic gas with the same equipment, without first getting the facts as to just what concentration and what gas is being used.

As an aid in selecting the proper type mask, the United States Government has set up the Bureau of Mines in Pittsburgh as a testing agency for the approval of gas masks. Some of these approved masks are for a specific gas or for a general class of gases. A Bureau of Mines approval is a very desirable thing to have on any gas mask and it should be determined before purchasing whether there is a Bureau of Mines approved mask for the gas you intend to use, by consulting the Bureau in Pittsburgh.

Remember, a Bureau of Mines approval is issued only for a complete mask, all parts of which are made by and submitted for approval by a single manufacturer. For example, a mask approved for a specific gas or class of gases, such as for organic vapors, will have no approval status whatever if, for instance, an acid gas canister were to be attached, even though the latter canister is produced by the same manufacturer, unless, of course, the acid gas canister also has been approved by the Bureau of Mines.

The Bureau of Mines approval would also be void if an approved canister of one make were attached to an approved mask of another make. This is a fact which many people do not appreciate and advertisements of approvals do not always emphasize or point out that perhaps an approval applies only to one specific canister for a specific gas or group of gases. In other words, investigate before you invest. The Bureau of Mines will be glad to list for you the manufacturers who have approved masks for your specific needs.

It is just as important to have other parts of your mask in first-class operating condition. Too often gas masks which are made of rubber are stored in a careless manner between jobs, so that the facepiece loses all semblance of its original shape by "permanent set" of the rubber. See that the facepiece is held in normal wearing position by placing it carefully over the faceform, provided in most cases, or by filling it with paper. See that the corrugated tube is not twisted. With these precautions and with the facepiece and tube washed and sterilized by dipping in a 10% solution of Lysol and thoroughly rinsed in fresh water and dried, your masks will last a long time. Be careful to detach the canister so that no liquid will enter the canister and ruin the contents.

Before putting a mask in service, it should be given a thorough inspection to see that the headbands have no broken tabs, that the buckles are in place, and the lens or eyepieces are clean and unbroken. Check the flutter or exhalation valve to see that it is functioning correctly. Examine the hose to see that it is free from tears and kinks, and is properly attached to the canister. Examine the canister and satisfy yourself that from previous experience it will furnish the service time necessary to do the job. If there is any doubt in your mind on this point replace the canister with a new one.

The final test is that for tightness and is the most important one of all. Put on the mask and adjust as per instructions of the manufacturer. Kink the tube, shutting off the air, and inhale. If the facepiece is giving a perfect fit, it will collapse and hold. Then place one hand over the opening at the bottom of the canister and repeat. This will show whether you have a gas-tight fit. Advance cautiously into the gaseous area after checking the mask, and, if no gas is detected, proceed with your job.

In summing up, please remember the following:

After having purchased a gas mask, treat it with the respect a device, which may some day save your life, deserves.

Always see that it is equipped with the proper canister—one that is capable of doing the job.

Make the tightness test in detail every time you put on the mask.

Give the mask a thorough inspection periodically and store it carefully in normal position between jobs.

(Continued on page 11)

Purchase masks officially approved by the Bureau of Mines when available for the gas you will encounter; maintain the approval and secure the added confidence afforded by knowing that, in addition to the tests of the manufacturer, the United States Bureau of Mines has also placed its seal certifying that the mask meets all the requirements set forth in the approval schedule.

After reading this article, is it not true that you may recall these same thoughts expressed many times before; all of which leads us to remark that, "Never were truer words spoken than 'The world does not need so much to be **told** as to be **reminded**!' "

Brenn Re-elected as President at the Twenty-Fifth Annual Meeting of the National Association of Insecticide and Disinfectant Manufacturers

THE Twenty-fifth Annual Meeting of the National Association of Insecticides and Disinfectant Manufacturers was held at Biltmore Hotel on December 5 and 6 in New York City. Registration was close to two hundred, and the sessions were well attended. Dr. F. L. Campbell of Ohio State University submitted a further progress report in connection with the research being done. Legislation and industry problems in general consumed the greater portion of consideration at the Convention.

Of particular interest to the pest control industry will be the addresses by Frank S. Cooper, Jr., Superintendent, International Building, Rockefeller Center, New York, and Dr. Ronald G. Law, Chief Sanitary Officer of the Canadian National Railways, at Montreal, Canada. The subject of the paper by Mr. Cooper was "Office Building Sanitation," and by Dr. Law, "Insecticides and Disinfectants in the Fur Bearing Animal Industry." Dr. R. C. Roark also gave a splendid address on the subject of "Home Made Fly Sprays." These papers will undoubtedly appear in the "Soap" Magazine, but "Pests" expects to publish one or two of these leading addresses.

Among the other speakers were:

H. A. Thomas, Shell Petroleum Corp., Chairman, Insecticide Marketing Committee; Melvin Fuld, Fuld Bros., Chairman, Sanitary Specialties Committee; J. J. T. Graham, Senior Chemist, U. S. Department of Agriculture, Food and Drug Administration, Washington, D. C.; Dr. Geo. F. Reddish, Lambert Pharmacal Co.; Dr. Emil G. Klarmann, Lehn & Fink Products Corp., Chairman, Disinfectants and Antiseptics Literature and Patents Committee; Jack Varley, Baird & McGuire, Inc., St. Louis; H. W. Hamilton, White Tar Co. of New Jersey, Chairman, Disinfectants and Antiseptics Marketing Committee; Gordon Baird, Baird & McGuire, Holbrook; Dr. Alfred Weed, John Powell & Co., Inc.; Clarence E. Cooper, Clarence E. Cooper Co., Inc., New York; Q. Forrest Walker, Economist, R. H. Macy & Co., New York.

The officers elected for the ensuing year are:

President—J. L. Brenn, Huntington Laboratories, Huntington, Ind.; First Vice-President—W. J. Zick, Stanco, Inc., New York City; Second Vice-President—John L. Curlett, McCormick Co., Inc., Baltimore, Md.; Treasurer—John Powell, John Powell & Co., New York City; Secretary—Ira P. MacNair, MacNair-Dorland & Co., New York City.

Board of Governors: For a three year term—Gordon Baird, Baird & McGuire, Inc., Holbrook, Mass.; H. W. Hamilton, White Tar Co. of New Jersey, Kearney, N. J.; Wallace Thomas, Gulf Refining Co., Pittsburgh, Pa. For a two year term—W. J. Gothard, Sinclair Refining Co., East Chicago, Ind.; Dr. E. J. Thomssen, J. R. Watkins, Winona, Minn.; C. F. Weirich, C. B. Dolge Co., Westport, Conn. For a term of one year—Henry A. Nelson, Chemical Supply Co., Cleveland, Ohio; S. S. Selig, Selig Company, Atlanta, Ga.; Russell H. Young, Davis Young Soap Co., Dayton, Ohio.

The Nominating Committee was composed of Charles F. Opitz, Chairman, H. W. Hamilton, C. C. Baird, C. P. McCormick, and Dr. G. F. Reddisch.

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Fleas as Vectors of Plague

By C. R. ESKEY, M. D., *Senior Surgeon*
U. S. Public Health Service Laboratory, San Francisco, Calif.

EDITOR'S NOTE: *The following article is reprinted with permission of the American Journal of Public Health. Originally the paper was read before the Western Branch American Public Health Association at the Ninth Annual Meeting in Portland, Oregon, June 6-8, 1938.*

IT IS now well established that fleas are capable of transmitting plague from one host to another. Innumerable species of these parasites have been found on animals throughout the world. Over 80 species have been collected from wild rodents in our western states and new ones are being discovered every year.

As a rule one species of animal seldom acts as the natural host for more than 3 or 4 species of fleas in the same locality, and sometimes for only one. Some varieties of fleas may naturally infest several species of animals, but usually such hosts belong to the same generic group. A few, like the sand flea, appear to utilize almost any animal as their normal host. When different kinds of animals live in close association or come in contact with each other, fleas peculiar to one may be found on others that are not their usual hosts. That fleas may subsist for long periods on blood of animals foreign to them has been demonstrated in the laboratory by keeping many different wild rodent fleas alive for 2 to over 5 months when fed on guinea pigs.

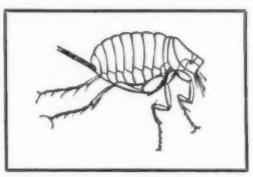
Animals that continually live in the same nesting place, as is usually the case of those dwelling in burrows, harbor more fleas than those that use their nests only for rearing their young. When ground squirrel nests are excavated during the summer, one may see enormous numbers of larvae wiggling about in them, and it is often possible to collect many adult fleas from the nests. Therefore, in determining the extent of the flea infestation of rodents, one must take into consideration the insects that are present in the nesting places as well as those found on the animals.

Climatic conditions play such an active part in determining the prevalence of fleas infesting domestic rodents that in some localities having unfavorable climates there are insufficient vectors to cause plague epizoötics. The potential danger of plague becoming established among wild rodents of any region has little relationship to its climate, being chiefly dependent upon the kind of rodents present and the extent of their population, because wild rodent fleas are as acclimated to their environment as are their wild hosts.

Experimental transmission of plague by fleas—The usual procedure followed in testing the ability of fleas to transmit plague by placing them on an infected rodent, then, after its death, allowing the exposed parasites to infest another animal, provides very little information regarding plague infection of fleas. Positive results obtained from such experiments might be due to infected flea feces rather than to the bites of the insects.

During the past 2 years experiments have been conducted at the Public Health Service Laboratory in San Francisco in which approximately 1,200 fleas have been tested individually; that is, each flea has been kept in a test tube from the time it was collected until its death. This method provides exact knowledge regarding the time that fleas become plague infected; the period that elapses before they transmit the disease; the length of time the insects survive infection; and, the identity of each flea can be ascertained after its death. Plague infection of living fleas can be determined by inoculation of their feces, and of dead fleas by injecting their bodies into guinea pigs.

Infecting fleas with plague—From the literature on plague one might gain the impression that a flea which has fed at any time on an infected animal might transmit the disease. In reality there is only a short time before death from acute plague that there are sufficient organisms in the blood to infect fleas. The blood of guinea pigs has not been infectious to fleas earlier than 36 hours before death and it is probable that fleas are not infected by the blood of other rodents over a longer time. During this short interval before death the degree of septicemia varies greatly in different guinea pigs. *Pasteurella pestis* may be found in every microscopic field of the blood smears of some acutely sick animals, while in others, blood cultures are required to demonstrate the organisms. As would be expected from the results of blood examinations, the percentage of fleas infected experimentally after feeding on different animals has varied greatly. In most cases only a very small number of fleas have been infected even when the blood examination demonstrated that it contained many organisms, and in no instance has it been possible to infect all fleas fed on one animal. In view of these observations it may be stated that when plague infected animals are killed during the early stages of the disease, or before the development of septicemia, none of the fleas on the animal will have been infected by its blood. Furthermore, even when animals have died of plague, only a small percentage of the fleas on the dead hosts are liable to be plague infected, because only a portion of the fleas that have fed during the septicemic period will be infected, and some fleas do not feed often enough to have ingested blood at this time.



It is doubtful whether fleas ever become infected by feeding on sick animals that recover from acute illness, or that have mild sub-acute infections. In one instance during the experiments at San Francisco a large number of fleas were fed daily for 3 days on a guinea pig that appeared to be so ill each day that it would die in a few hours, and then it began to show signs of improvement which went on to complete recovery. None of the parasites that fed on this animal were infected and blood cultures made during the 3 days of acute illness remained sterile. This guinea pig was inoculated again with plague and recovered a second time.

Multiplication of Pasteurella pestis in fleas—During the act of feeding, blood passes through the esophagus into the proventriculus, and then through a short tubular structure into the stomach proper. The blood is stored during digestion in both the proventriculus and stomach so that ingested bacteria may multiply and form clumps in either organ. More than one mass may be present in the stomach and remain discrete for a long time or coalesce with the formation of one large growth. The rapidity with which the masses grow varies greatly in different fleas. In some only small clumps are present after two or more months, while very rapid growth may occur with extension of the masses into the proventriculus. In many instances the stomachs are greatly distorted in shape and size by the bacterial growths and have a rather characteristic appearance, being contracted into a more or less tubular form with jagged margins.

Bacterial growths in the proventriculus produce great enlargement of this structure and nearly always extend forward into the esophagus, causing it to be distorted and dilated. Whether or not the masses formed by *P. pestis* develop primarily in the proventriculus or invade it from the stomach, the end results are the same, leading eventually to partial, and then complete obstruction of the esophagus. This blockage has been observed to occur as early as 4 days after plague infection, or it may not develop until several months after ingestion of *P. pestis*. In the case of a number of fleas killed over 3 and 4 months after infection there were no visible masses in the proventriculus and only small bacterial growths were seen in their stomachs.

The dark brown masses formed by the multiplication of *P. Pestis* in fleas are not solid clumps of viable organisms but are composed chiefly of colloidal-like material so adhesive that the masses can usually be dissected out intact, and require rough handling to tear them apart. In stained specimens coccobacilli are found in large numbers on the surface of the growth, on the adjacent membranes of the stomach, and in any fluid that may be present.

Transmission of plague by flea bites—From such information as one may obtain from textbooks it would seem that when a host is bitten by a plague infected flea infection will naturally follow the bite. This idea is further from the truth than the belief that all fleas which have fed on an infected animal will be carriers of plague. In San Francisco over 300 fleas have been infected, and they have fed several thousand times and still their bites have not been infectious. There were individual infected fleas that fed from 50 to 100 times on guinea pigs without transmitting plague. Less than 10 per cent of wild rodent fleas acted as vectors in the laboratory, indicating that in nature only a very small percentage of fleas which have fed on infected wild rodents will really infect other animals by their bites.

As long as the bacterial masses do not prevent the passage of ingested blood into the stomach the bites of plague infected fleas are harmless. It is only after development of obstruction to the flow of blood and regurgitation which carries the organisms into the wound occurs that the bites of fleas are infectious. In the course of experiments fleas have transmitted plague as early as 5 days and as late as 147 days after they had ingested *P. pestis*.

Normal fleas of nearly all species seldom insert their probiscides more than once and satisfy their hunger in less than 5 minutes, while the efforts of blocked fleas to feed are often characterized by prolonged exertions to secure blood in one place, or by

shifting from one site to another, until they apparently become exhausted. Sometimes a tiny drop of regurgitated blood exudes from the proboscis of an obstructed flea when it is withdrawn from the skin. Many fleas with complete obstruction of the esophagus fail to transmit plague regardless of how prolonged their exertions to feed have been. This may be due to the fact that the blocked fleas are too weak for their efforts to cause regurgitation, or the organisms are not detached from the bacterial growths to be carried into the wounds. After death the obstruction of the esophagus is easily seen with the microscope and frequently fresh red blood is visible in the esophagus in front of the obstructing mass.

Period fleas are infectious—Very few infected fleas survived more than 24 to 48 hours after there were indications that there was an obstruction to the flow of the blood meal to the stomach, regardless of whether or not their attempts to feed were infectious. Of the 45 fleas which transmitted plague in the laboratory only about 20 per cent infected more than one animal, although some of those that failed to cause multiple transmissions attempted to feed after they had infected one guinea pig. Five fleas infected 3 to 5 guinea pigs and one infected 10 animals. This latter flea and one that infected 5 animals transmitted the infection for 5 and 10 days respectively. The infectious life of these 2 fleas was exceptionally long because most blocked fleas live only a short time and few of them are capable of infecting more than one host before they die.

Transmission by male and female fleas—Although many male fleas of different species were used in the laboratory experiments, only 2 of the 45 that transmitted plague were males, which is rather conclusive evidence that female fleas are much better vectors than males.

Plague infections of different species of fleas—During the experiments in San Francisco it has been possible to demonstrate plague infection of 20 different species of fleas, 15 of which were collected from wild rodents, 3 from domestic rats, and 2 miscellaneous fleas. Of the different species found to be plague infected only 11 transmitted the infection to guinea pigs. Domestic rats, prairie dogs, chipmunks, and several varieties of ground squirrels acted as the natural hosts of the fleas which were vectors of plague in the laboratory. Failure to obtain experimental transmission with certain species of fleas does not prove that they are incapable of acting as transmitting agents. In fact the results of laboratory investigation tend to indicate that any flea, regardless of species, that feeds on septicemic blood may become plague infected, and later blockage of the esophagus may occur which would make the flea a potential vector.

Although there is a possibility that all fleas may act as transmitting agents of plague, epidemiological data and laboratory studies clearly demonstrate that the rat fleas, *Xenopsylla Cheopis*, are much more active and dangerous vectors of plague than any others tested. A second species of rat fleas, *Nosopsyllus fasciatus*, was found to be as capable of transmitting plague as any of the wild rodent fleas. Some species of fleas seem to be very feeble vectors.

When compared with all other species studied, *Xenopsylla cheopis* are considered the most efficient transmitting agents because they are more readily infected when

(Continued on page 14)

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fed on septicemic blood, and they transmitted the disease to many more guinea pigs. They also tend to become blocked earlier and to remain infectious for a longer time than other fleas. Blocked cheopis are very persistent in their efforts to obtain blood and in many instances they produced 2 to 5 foci of infection on the abdomen of guinea pigs where they had made wounds in their attempts to feed. Some cheopis appear to be capable of infecting guinea pigs every time they insert their probiscides. Multiple foci of infection rarely followed the bites of any fleas except cheopis.

The average length of life of plague infected *Xenopsylla cheopis* is less than 1 month due to the early involvement of their proventriculus by the bacterial growth. Many cheopis did not survive infection 2 weeks, and the longest that any of them lived was about 50 days, while many infected fleas from wild rodents and the rat fleas *Nosopsyllus fasciatus* remained alive from 2 to over 4 months before they became blocked and died.

If different species of fleas do not have the same ability to transmit plague, and if the infection persists much longer in some species than others, it may be assumed that the character of plague epizoötics will vary according to the kinds of fleas involved in its dissemination. For instance, an epizoötic in a community where *Xenopsylla cheopis* are prevalent should be much more severe and accompanied by a greater incidence of human infection than would be the case in a locality where the spread of the infection depended on one or more of the other species of flies studied in the laboratory. On the other hand, in regions where cheopis are the only rodent fleas present to maintain an epizoötic, and conditions arise which tend to cause the disease to subside in rodents, so that its continuation depends upon the persistence of the infection in fleas the epizoötic would be more likely to disappear than would be the case if other fleas were present, such as *Nosopsyllus fasciatus*, which may remain infected for a much longer time than cheopis. Wild rodent fleas may remain infected for several months so that it is possible for plague infection to be carried over the hibernating period of wild rodents in fleas.

Plague infection of flea feces—Virulent plague bacilli can be demonstrated in the feces of nearly all plague infected fleas by inoculation into guinea pigs. Some species of fleas do not excrete virulent organisms as constantly as others. The length of time fleas have been infected does not affect the virulence of the bacteria in their feces. In some cases the inoculation of excreta collected at the time fleas have died has produced plague in guinea pigs when injection of the fleas gave negative results.

Since Bacot and Martin demonstrated that fleas transmit plague when feeding, the old idea that transmission followed rubbing infected feces into minute wounds has been more or less discarded. However, it is possible that plague is disseminated among rodents much more frequently through the agency of infectious feces than is generally believed. It is difficult to understand how rodents escape infection in this manner when we consider that one or more infected fleas may live for several months on their hosts and during that time continually deposit large numbers of virulent plague organisms in the fur on the skin of rodents which will cause infection if rubbed into minute abrasions. It is not necessary for the infectious feces to gain entrance to the hosts' bodies immediately after they have been deposited in order to induce infection because recent experiments conducted at San Francisco have shown that *P. pestis* may retain its virulence as long as 4 weeks in dried flea feces kept at room temperature.

It is unlikely that humans contract bubonic plague through the agency of flea feces because rodent fleas do not remain with human hosts for a very long time and there is slight chance for them to deposit feces on the skin of man. Fleas rarely defecate when feeding and the lesions of rodent fleas seldom cause itching.

Tendency of rodent fleas to attack man—It has been known for many years that domestic rat fleas often bite man, but there is little knowledge regarding the facility with which wild rodent fleas will attack humans. From the fact that 6 different species of sylvan fleas—or all that have been tested in sufficient numbers at the laboratory in San Francisco—have been found to feed on human blood, it may be assumed that many species of wild rodent fleas will bite man. In one instance 18 fleas were collected from a ground squirrel nest shipped to the laboratory and each flea as captured was placed on the arm of one of the workers with the result that 17 of them fed almost as soon as they touched the skin. It has been possible to keep several kinds of wild rodent fleas alive for a number of days by feeding them on human blood, but others of the same species died of starvation before they would feed on man. Our observations have shown that all rodent fleas have to be starved to a greater extent before they will accept human blood than is required for them to feed on rodents that are not their natural hosts. Many fleas that have refused to bite man were found to feed at once when placed on rats or guinea pigs. From these findings it would appear that starved, blocked, plague infected fleas of wild rodents may attack man when they come in contact with the skin so that there is danger of humans contracting bubonic plague in all regions where wild rodents are infected.

CONCLUSION

Twenty different species of fleas have been infected with plague in the laboratory but only 11 species, 9 of which were collected from wild rodents, transmitted the disease to guinea pigs; only a portion of fleas fed on plague infected guinea pigs a few hours before the animals died were infected, and of those infected only a small percentage transmitted plague to other guinea pigs. Flea bites are not infectious until the masses formed by *P. pestis* cause obstruction of the esophagus. This condition may develop in a few days or not for over 4 months. Few fleas ever infect more than one animal and blocked, infectious fleas generally die within 48 hours of the time there is evidence of obstruction to their stomachs.

Infected fleas are constantly excreting virulent coccobacilli in their feces which may survive for as long as 4 weeks in the dried excreta so that rodents are exposed to infection from the feces as well as the bites of fleas.

There is always a possibility of humans contracting bubonic plague from blocked fleas present on wild rodents in regions where sylvatic plague exists, but these fleas are not nearly so dangerous to man as the domestic rat fleas, *Xenopsylla cheopis*.

From American Journal Public Health, published by American Public Health Association, New York.

"Nothing is too high for a man to reach, but he must climb with care and confidence."

Losses Occasioned by Insects, Mites and Ticks in the United States

Under the above title as Mimeograph E-444 of the Bureau of Entomology and Plant Quarantine, J. A. Hyslop has presented a valuable contribution to economic entomology. Excerpts from the introduction follow:

"The cost of insect depredations and their control is an annual and very heavy tax on the producer, the processor, the transporter, the wholesaler, the jobber, the retailer, and the ultimate consumer of agricultural produce. The price paid the producer is dependent on quality as well as quantity. This price is protected liberally by the dealers who handle the produce and is in a large measure passed on to the ultimate consumer and reflected in both the price paid to the producer and the price paid by the consumer."

"It is estimated that in North America there are nearly 80,000 different kinds of insects. In the records of the Insect Pest Survey are notes on over 20,000 species of insects, at least 10,000 of which are pests of more or less importance. It must also be recognized that many kinds of insects affect man esthetically by their presence, and others affect him physically by their bites and stings. These types of damage cannot be estimated in tangible figures and yet are a very considerable factor in man's relationship with the insect world."

"The estimated damage done by the insects included in this paper (less than 100 species) amounts to $1,601,527,000 annually. Much of this loss is preventable and warrants continued efforts to discover more effective control measures and to secure more effective application of the control measures already known."

Each insect is discussed individually and in reasonable detail and represents the most carefully prepared estimates available.

Annual sales of the principal insecticides and fungicides in the United States is estimated at $24,115,790.

Mice, Cats, Milk

Comment on Problem at Trade School

To the Editor of the Telegram:

The subject of mice, cats and milk at one of the trade schools is amusing, and not in itself important. As treated in today's Telegram, however, an injustice is done the pest control industry which you certainly did not intend.

Actually, these schools had not engaged the services of an exterminator, but rather purchased unnamed material for self use. Thus the statement "such exterminating service was unsatisfactory"—and the cats therefore collected—is much like stating that a sick person has tried every known remedy, except to call a doctor.

No local institution of which I happen to know, which has been serviced by any of our several local pest control operators, has had other than satisfactory results. Incidentally, from a health standpoint the use of cats is not one of the approved methods of mouse extermination.

G. R. ELLIOTT,
Member, Board of Directors,
National Pest Control
Association, Inc.

Worcester, Nov. 1.
—Worcester Daily Telegram, Nov. 3.

Richmond, Virginia, Entertains The Entomological Societies

THE two National Entomological Societies (The Entomological Society of America, under the Presidency of A. L. Melander, and the American Association of Economic Entomologists, under the presidency of J. J. Davis), held their 51st meeting at Richmond, Va., December 26 to December 30. Hotel John Marshall was the headquarters. Each organization held separate meetings, but joined in a symposium entitled "Insect Population," conducted on Tuesday afternoon of the convention. The annual Entomologists' Dinner was held on Wednesday evening.

Prof. J. J. Davis of Purdue took as the title of his presidential message "The Necessity of a Changing World." Emphasizing the thought that this is known as the Age of Insects, Professor Davis outlined the progress made over a period of years, using as illustration the research and control measures involving such pests as the peachtree borer, the codling moth, and the European corn borer. "Pests" expects to publish in a subsequent issue the full text of the address delivered by Professor Davis. Of especial interest to the pest control operators was the observation made by Professor Davis when he said, "The public has been so 'fed up' on the emphasized danger of insecticides, that more and more, we find Federal, State, City, and private specifications more and more requiring the use of non-poisonous material, when as a matter of fact, the danger from the proper use of materials poisonous to humans is practically nil, when in the hands of an experienced operator. For example, there is little basis for specifying the use of non-poisonous material in a contract for controlling cockroaches in a building, when a fluorine compound will give better results, and without danger is applied properly. My plea is that we give less stress in our publicity to non-poisonous preparations, and instead emphasize the importance of correct use."

Prof. W. P. Flint of Urbana, Ill., was in charge of the arrangement of the program, which was as follows:

Monday, December 26

2:30 P. M.—Tobacco Insect Council.

7:30 P. M.—Pea Aphis Conference.

9:00 P. M.—Executive Committee meeting for presentation of committee reports except those which are scheduled for the final business session.

Tuesday, December 27

9:30 A. M.—Section of Apiculture.

9:30 A. M.—Pea Aphis Conference. Discussion of recommendations for 1939.

12 Noon—General Session. The Presidential Address.

2:00 P. M.—Joint Session of the Economic Entomologists, The Entomological Society of America and the Ecological Society for a Symposium on Insect Populations; Dr. V. E. Shelford, presiding.

7:30 P. M.—Codling Moth Conference.

7:30 P. M.—Section of Teaching.

10:00 P. M.—Reception for President of the American Association for the Advancement of Science following address of retiring president, at the Mosque Auditorium.

Wednesday, December 28

9:30 A. M.—General Session for the reading of papers. Reports of Committees.

1:30 P. M. General Session for the reading of papers.

6:30 P. M.—Joint Entomological Dinner. Annual public address by Dr. C. T. Brues, The Entomological Society of America; subject "Food, Drink and Evolution."

Thursday, December 29

9:30 A. M.—General Session for the reading of papers.

9:30 A. M.—Plant Quarantine Section.

1:30 P. M.—General Session for the reading of papers.

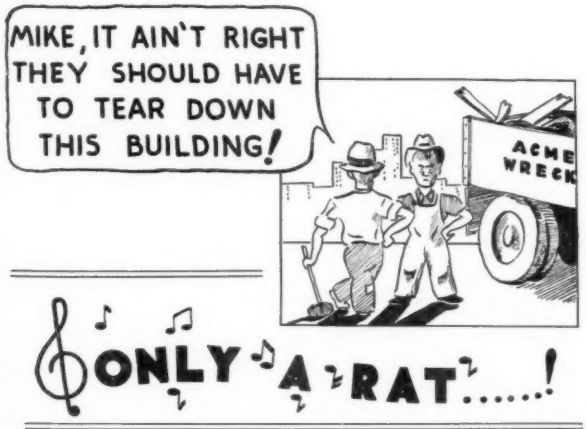
1:30 P. M.—Plant Quarantine Section.

7:30 P. M.—Section on Extension.

Friday, December 30

9:30 A. M.—General Session for the reading of papers and final business meeting. Executive Committee Meeting.

"You forget to limp when you learn to laugh."



When you go after Rodents, consider these advantages—peculiar to LARVACIDE:

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Write for interesting informative literature—and advice on any extermination problem that's on your mind.

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To the vermin exterminator who is desirous of extending an outstanding service to his client J-O PHOSPHOROUS PASTE *is* the solution

For the control of rats and roaches this product is widely and successfully used by Pest Control Operators throughout the country.

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Manufacturers of Exterminating Products Since 1874

Hotel Sanitation and Insect Control

By WARREN D. LEWIS
National Hotel Management Co.

EVERY hotel has its own sanitation and insect control problem. The degree to which this is a problem is determined to a great extent by the maintenance and operation of the particular hotel in question. This does not mean that an old hotel is harder to maintain in a sanitary condition than a new one if it has been taken care of from the beginning of its operation. I might say here that in our experience as an operating company we are frequently called upon to inspect properties, and I have found that the sanitation and insect problem is directly proportional, if you wish to put it that way, to the way the houses have been maintained.

In discussing this subject, I must necessarily speak more of the Hotel New Yorker, as I am not only more intimately acquainted with its problems, as I make my headquarters there, but also due to the fact that it is more or less the "mother hotel" of our group, and our present system of control of these matters has been more or less developed at the New Yorker. The National Hotel Management Company has one policy which is the most important one I can mention in my talk to you, and that is never to let a property run down—or, in other words, don't milk the property to its own detriment. This is so basic in the subject I am discussing that I want to mention it before I start into the various problems you are interested in. At the Hotel New Yorker, we try out many ideas on all subjects, not alone the one we are discussing, but everything we think will work out to the benefit of our hotels, and those that are adopted are sent out in the form of "setups" to be followed, except in special cases, by everyone in all hotels under our direction. Naturally our group of Hotels are fairly substantial buyers of many sanitary products, such as disinfectants, deodorants, insecticides, cleansers and soaps.

Any new building presents many problems in sanitation and insect control even when turned over for operation by the builders, and as a hotel gets older these problems will constantly arise and if not handled promptly and properly will become chronic and make the job of overcoming them quite difficult later on. To begin with, we have found that plenty of illumination is one of the biggest aids to our problem, and Mr. Ralph Hitz particularly might be called a crank on this subject, as he insists that no hotel can be properly kept clean and in a sanitary condition unless light is plentiful, so that the corners and other dark spots may be clearly visible, and I believe that the Hotel New Yorker is probably the best example of this of any of our hotels, being the newest one.

Sanitation in any building, I believe, can be said to start with the plumbing, and a good plumbing system to start with would make the rest of the job much easier. We are very fortunate in the Hotel New Yorker in having a well-laid out plumbing system, and any changes or improvement which we have made have been to better the plumbing system and not to take any short-cuts which would lessen its efficiency. I might cite for an example that dead-end floor drains have been eliminated wherever possible by having a near-by sink flush through this drain and thus keep it in a sanitary condition.

Our concrete and tile floors are scrubbed or mopped daily with water containing some jellied soap with pine disinfecting qualities, so that there will be no odor or other troubles arising from this washing. Linoleum and rubber tile in the front portions of the building are cleaned every night with a damp mop, which has been dipped in water containing a small amount of jellied soap. Our passenger elevator cars have rubber tile floors, which are also mopped and waxed daily; and, in addition, rubbed off several times during the day to keep them in perfect condition. I might add here that we have found that asphalt tile stands up better against greases and other liquids in our dining rooms, which is very desirable, as a loose or missing tile presents a serious sanitation problem. Marble and terrazzo floors are scrubbed and mopped, but never waxed, as that makes them too slippery for our use, and a thorough mopping with clean water after scrubbing keeps them bright and in good condition.

The walls of our corridors in the service portion of the building are painted yearly and washed between times, using a disinfecting soap, while the corners in the service corridors at the floor level are painted white to prevent any accumulation of dirt.

We are having our urinals cleaned by an outside contractor once a week, who uses a very strong chemical, and this keeps them in a sanitary condition, as I believe these are one of the most unsanitary fixtures used in the average hotel, if not cleaned properly. I might add that we use disinfecting cakes in urinals to create a pleasant odor and not to cover up one which should not exist. In this connection, toilet bowls are also given somewhat similar treatment for a like purpose.

Employees' lockers are cleaned out regularly and nothing is ever permitted to remain either above or below a locker, whether old shoes, clothes or whatnot. Cleaning our lockers regularly is apt to eliminate a great deal of discarded clothing, etc., which is bound to create odors. As far as our employees are concerned, before they are hired, they are subjected to a very strict medical examination, and those who are not, shall we say medically sanitary, are not permitted to become members of our organization. Our washrooms are plentifully supplied with wash basins, and employees at all times must adhere to the rule to wash their hands, using a high germicidal content soap, even though they enter the locker for no other purpose than to get something from their locker. Waiters, waitresses, and other employees in our dining rooms, and in contact with the public, have their hands and finger nails inspected before going on duty, as well as their clothing and general appearance. We also make a practice, especially in hot weather, to display bulletins advocating frequent changes of clothing and bathing, as well as keeping the body in good physical condition to eliminate bad breath and other disagreeable features of this type.

For dish washing we use a soap compound of our own specifications with water at about 180 degrees, so that all dishes and other tableware will be absolutely clean. Silver, likewise, is cleaned by a special soap, purchased for that purpose to eliminate any chance of food contamination.

At the Hotel New Yorker, we are fortunate in having the largest private laundry in any hotel, and here we use not only good soap to clean and preserve our linens, which as you are aware it is to our advantage to do, but we also use hot water at approximately 180 degrees temperature to eliminate any chance of germs adhering to the cleaned clothes.

We have a number of cold water supply tanks up through the buildings, as well as in the basement, due to the height of the New Yorker, and these are cleaned and washed out yearly and painted with a nontasting paint to preserve their sanitary condition. Hot water heaters are also cleaned out, twice yearly, for the same reason.

I have tried in the above to outline briefly most of the sanitary conditions we overcome and the reasons we find it advantageous to do so. There is another subject, which enters into our discussion, and that is the building repairs and maintenance, as we do everything possible to eliminate holes, cracks, and loose plaster, or other items of construction, which not only produce an unsanitary condition, but are hiding places for vermin.

In our kitchens, we have found it necessary to replace and renew a great deal of the tile which has become loose, grouting in the remainder to eliminate any cracks or crevices.

In our guest bathrooms, we also grout in the tile for a similar purpose.

Throughout the basements of the New Yorker, we have considerable steel wainscoting, and some of this has become loose and has been replaced by cement wainscoting, which we have found just as durable as the steel and much better from a sanitary standpoint.

Where piping comes through floors, and it is possible, we have built up a cement curb around it, several inches above the floor with a sloping top to eliminate dirt pockets.

Naturally, any plaster which is loose or cracked is replaced, as necessary.

Another thing which has helped us a great deal is the installation of steel corner angles. Originally, we put these over the tile and plaster to protect them, but we have since found that removing the tile and setting the corner angle in flush has made not only a more durable job, but one where there are no cracks or other places for dirt or vermin to lodge.

I might add that our garbage sorting room came in for special attention, as I think we are all agreed that garbage is one thing which attracts insects, and the policies mentioned have been very carefully carried out in this room.

Rubber tile floors are kept in first-class condition, as it is realized that if tile is not replaced, or the cracks between it closed, the sanitary condition is gone immediately, especially if milk or other liquids are spilled on the floor. In our corridors, when possible, we have removed the square base and installed a sanitary base which eliminates another dirt pocket.

All of the preceding we have found extremely desirable to promote not only a sanitary condition, but to cut down on the troubles and cost of our insect control. I have purposely left the question of insect control as the final topic to discuss, as with proper sanitation and good building maintenance as outlined previously, this problem is reduced to a minimum.

I would like to mention mosquitoes as the first item, as we occasionally have them outdoors on our high terraces at the New Yorker when a friendly wind from the Jer-

sey shore carries them across the Hudson. However, they are easily eliminated with a liquid spray and cause us very little trouble. Flies also are not very numerous and with a liquid spray are exterminated as soon as discovered.

Moths are something we have very little trouble with at the New Yorker; in fact, it is a rarity to see any. However, a couple of our hotels, especially one in the South, create a problem and are only kept down by continual spraying with an insecticide and a close check on the condition of the material.

With the New Yorker being a fireproof building and space being at a premium, we never have a great deal of goods stored, which eliminates the breeding of rats and mice, and when these are found, they are promptly caught and destroyed.

Bed bugs are naturally brought in from the outside on clothing, as even though people are exceptionally clean, they may acquire them in our well used subways and taxis. It is our policy in any room where the bugs are found to promptly spray the furniture and the room in general, especially the recesses in the bed-ends where the side rails are attached, as well as all the surfaces of new mattresses and springs. However, the older mattresses and springs are sent to the incinerator room and burned, and as there is no wall paper in our guest rooms and the carpets are scrubbed regularly, the chance for any breeding of these pests is negligible.

Ants are another thing which we do not have, as there is no place in a fire-proof building for them to breed and the exterminator eliminates them automatically in his rounds, if they should come in on food and produce.

Roaches, while our biggest problem, compared to other forms of insect life, are really not a problem, as with our exterminating setup, they are kept down to what I might call an irreducible minimum. We employ an outside exterminating contractor, who visits the Hotel daily, and spreads insect powder around the employees' locker rooms; also kitchens, bakeries, and other places where food is handled. This exterminating system is also applied to locations where roaches or other vermin might breed if not treated in this manner. In addition, the Steward and Housekeeper have spray guns, and any roaches that happen to be noticed are promptly exterminated between times by our own help. We have found that by keeping our elevator shafts and pits clean, especially those handling food, and also keeping the Receiving Department, where the goods are brought in, in first-class sanitary condition, that the problem of roach control is fairly simple.

Every forward looking manufacturer can better his own standing with his customer by really studying the customer's problem and making recommendations as to the elimination of cracks, holes, loose tile, etc., even though such recommendations may appear to lessen his chance of doing business. You must bear in mind that every Hotel is in constant danger of both rodent and insect infestation, so that the generous use of your products as safeguards is always a necessity. Of course, the use of disinfectants and deodorizing materials goes without saying, and we could not hope to keep our Hotels habitable without their daily use.

Address before 24th Annual Meeting, Natl. Assn. of Insecticide & Disinfectant Mfrs., New York, December, 1937.

The Termites

ROBERT HILLYER.

Blind to all reasoned aim, this furtive folk
Breed to destroy, destroy to breed once more;
These workers tunneling the oaken floor
To grayish-yellow dust as fine as smoke.
Sometimes ahushing slide within the core
Of beams gave warning where some fiber broke.
A dim voice murmured: "This is solid oak,
No fear; it's stood a century and more."

And still the midnight work advanced, and still
The sleepers in their forebears' house slept on.
Then suddenly it vanished. Roof to sill.
It fell to dust—all but the termites gone.
Some fell upon each other; some took flight
To scatter blind destruction through the night.
—New York Tribune September 21, 1938.

You're Invited

Every reader of "PESTS" is invited to become a Contributing Editor. Send in news about yourself — your establishment and about fellow pest control operators in your vicinity. Will be glad to tell the profession of your progress and the activities in your territory.

Just give us the facts—we'll do the rest. We welcome your cooperation.

REMEMBER—THIS IS YOUR TRADE PAPER.

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The Original Jelly Ant Bait.

SIMPLE QUICK SURE

Magikil Jelly is a product that eliminates the "I hope it works" feeling when using it for service work, or over-the-counter sales. Why not try this material and prove to yourself just what it will do. We know that Magikil Jelly is effective, as it was developed by one of the leading universities in the United States and further backed up by 5 years of steadily increasing sales. Packed in household traps, 1 oz., 3 oz., 8 oz., tubes and bulk for service work.

We are also offering Thallium Sulphate 99.9%, packed in 1 lb., 5 Lb. and 10 Lb. containers.

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● **A powerful Fluoride insecticide for the control of insects in the house, the garden, the farm and the warehouse.**

● **Fluorex V has greater killing power than ordinary sodium fluoride. It is composed of the more active Fluosilicates in the form of a fine fluffy powder having a slightly acid reaction. It is this slightly acid reaction that makes Fluorex V both a contact as well as a stomach poison and explains its greater potency.**

● **Ordinary Sodium Fluoride is a neutral salt. Contact with it is harmless unless some of it is actually swallowed by the insects. Fluorex V, owing to its slightly acid character, acts as a local irritant when insects come in contact with it. In trying to relieve itself the insect licks the irritated part and thus is bound to swallow some of the poison with fatal effect.**

● **Fluorex V has the additional advantage of being universally applicable for all exterminating purposes. It is just as effective against larger as against the smaller vermin. It will kill off roaches, ants, fleas, silverfish in the household, chicken lice, bugs and beetles on the farm, as well as aphis, borers, worms, on fruit trees and berry bushes.**

PRICES

Bbls., 325 lbs. @	$0.08¾	per lb.
Kegs, 100 lbs. @	.10	per lb.
Drums, 50 lbs. @	.12	per lb.
Drums, 25 lbs. @	.12½	per lb.

Tinted Blue, ½c per lb. additional.

American Fluoride Corporation
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LOCAL ORGANIZATION NEWS

Connecticut Operators Organize

For some time, Connecticut pest control operators have enjoyed the hospitality of the Connecticut Agricultural Experiment Station for general meetings. Mr. Neely Turner, Entomologist, has assisted greatly in presenting interesting topics for discussion, and outlined ways in which the pest control operators might make for a better industry. The culmination of these meetings last year and a good part of this year resulted in a general invitation extended for the meeting that was held on December 9, at New Haven, Conn.

Eighteen operators and guests were present for the organization of what will be known as the Connecticut Pest Control Operators' Association. F. E. Bohman of Hartford was elected temporary Chairman, and Walker Heap of New Haven, as temporary secretary. The organization committee, which will discuss and prepare a proposed Constitution and By-Laws, as well as to offer nominations for permanent officers, and outline plans for future activities, is composed of John Duncan of New Haven, chairman, Clyde O'Connell of Stamford, and Fred Haas of Hartford. The next meeting is to be held on Friday, January 13, at the Connecticut Agricultural Experiment Station in New Haven, and a cordial invitation is again being extended to all of the pest control operators in the state of Connecticut to attend this meeting.

Four visitors were welcomed by the Connecticut operators, and each spoke briefly about phases of pest control and the activities of Association work, with particular emphasis on what the National Association was accomplishing. These guests were H. G. Irving Sameth, President of the National Association, New York City; Charles W. Houghton, Regional Vice President, National Association, Boston, Mass.; George R. Elliott, Treasurer, National Association, Worcester, Mass., and William O. Buettner, Secretary, National Association, Brooklyn, N. Y.

The outstanding feature of the meeting was the very ably prepared paper given by Mr. Neely Turner, entitled "Insects Occurring in Buildings of Connecticut." Mr. Turner outlined the various types of insects that are most prevalent, and gave very helpful information as to how they can be recognized, as well as suggested general measures of control. Accompanying the address was a carefully prepared exhibit. Mr. Turner's paper will unquestionably appear in "Pests" some time the early part of 1939, and serve as a suggestion as to how similar activities of this type might be put into effect in other cities.

The principal discussion at the general meeting will be confined to laws, rules, and regulations. There will likewise be given much attention to the general subject of insecticides and disinfectants at the meeting in either February or March.

Among those who were present were: John Duncan, Birchard System; E. M. Searles, Abbey Exterminating; D. F. Mason, Mason Exterminating Co.; W. R. Heap, Abbot Pest Control Co.; Berny Keles, United Exterminators; Clyde O'Connell, Ozane Co.; Frederick Dietz, Dietz Exterminating Co.; David Feinson, Atlantic Exterminating Co.; Fred Haas, Aetna Exterminating Co.; Julius P. Tondat, Tondat Fumigating Co.; Thomas J. Ledwith, Berg Exterminating Co.; F. E. Bohman, Bohman Bros., Inc.; Irving Sameth, C. W. Houghton; G. R. Elliott; William O. Buettner.

Associated Exterminators and Fumigators of New York

The Associated Exterminators & Fumigators held a special meeting on December 20, primarily to consider the renewal of union agreement, which is to go into effect on January 1, 1939. President William O. Buettner presided, and in the absence of the chairman of the Negotiations Committee, presented the report for the Committee.

Essentially the contract that is to be renewed has the same clauses as the previous contract, except that the wage scale will change the minimum, which was $28.00, and become $29.00 in 1939. These wages are based on a forty-hour week. The new contract, which is to go into effect, will run for three years, with further increases in wages for the years of 1940 and 1941. The new contract will also provide for seniority rights, and a one-week vacation. As of December 23, over forty firms have agreed to observe the union agreement. All of the larger firms of New York City are joined by the smaller firms in this contract.

Other items for discussion included general ethics of the industry.

The next meeting of the association will be held on Tuesday, January 10, at which time there will take place the annual election of officers for the coming year. A good many of the members of the Associated Exterminators & Fumigators of New York plan to attend the Purdue conference to be held January 16 to 20.

New England Pest Control Association

The annual election of the New England Pest Control Association took place at the meeting in November, held at Hotel Lenox in Boston, Mass. President Bartlett W. Eldredge presided.

Enthusiasm was displayed by those who had attended the Sixth Annual Convention of the National Pest Control Association, held in Omaha, Nebr., and Peter DeSilva was given a round of applause as he told of the Puritan scene provided in the parade.

The guest speaker of the evening was Stevenson Corey, who gave a most interesting and enlightening lecture on his experiences with the Byrd Antarctic Expedition II. This talk will be repeated at a future meeting.

The New England Pest Control Association also announced a special course dealing with identification and habits of household insects, which will be given in conjunction with the New England Museum of Natural History. Dr. Charles Blake of Massachusetts Institute of Technology, and Dr. Richard Dow of the Museum of Natural History, will be the instructors. This course will consist of a series of ten lectures, beginning with February 13, and ending March 16, the sessions being held on Monday and Thursday evenings, at 8 o'clock, at the Museum Lecture Hall. This course will be open only to owners of pest control firms, and a small registration fee will prevail. All registration is to be made through the Secretary of the New England Pest Control Association, at 276 Devonshire Street, Boston, Mass.

The tentative outline of the course indicates two lectures on the "Form and Function of a Typical Insect," three lectures on identification and classification of household pests, and the final five lectures will be a discussion of the life histories and habits of pests that annoy man, feed on food, feed on fabrics, and injure food. This course in elementary entomology should most certainly prove of much value to the owner-operators of pest control firms in New England, especially in view of the fact that a cordial invitation has been extended by the New England Pest Control Association to others than members to participate in this course.

Election of officers brought Charles W. Houghton as president; George R. Elliott of Worcester, Mass., vice president; Mark Weintraub, secretary, and Bartlett W. Eldredge, treasurer.

The next regular meeting of the New England Pest Control Association will be held Monday, January 9, at Hotel Lenox in Boston, at 8:00 P. M. Advertising will be the feature of the discussion, and this discussion will be led by George R. Elliott.

Memphis Pest Control Association

The regular monthly meeting was held at the DeVoy Hotel, on Wednesday, December 7. President Arthur Murray presided.

The Memphis Pest Control Association plans to make a more careful study of the Mississippi State Law with especial regard to the regulations that have been announced by the Mississippi State Plant Board. There is under consideration possible legislation for either Memphis, Tenn., or for the entire state of Tennessee.

The Association will be represented by several members at the Southern Pest Control Operators' Conference, which is to be held at the University of Louisiana.

Discussion was also held with regard to the publicity surrounding rat campaigns at Clarksdale, Miss., and the plan that it is understood will be followed in connection with these campaigns for the free distribution of baits. The Memphis Association is unalterably opposed to campaigns of this kind, and plans to protest.

St. Louis Pest Control Association

The regular meeting of the St. Louis Pest Control Association was held on December 14 at Hotel York, St. Louis. This being the annual meeting, there took place the election of officers. The officers for the coming year are: President, H. H. Cassilly; vice president, Roy McCullough, and secretary-treasurer, Charles Denny. Board of Directors: W. F. Martin, chairman, Bug Death Products Co.; Alton L. Logan, Edwardsville, Illinois; Charles Maly, Maly Brothers Termite Control Co.; W. F. Exner, Termite Control Co. of Webster Groves.

Much enthusiasm was displayed with regard to the splendid report about the Omaha convention, and interest is keen for the coming Purdue Pest Control Operators' Conference. Several from St. Louis expect to attend the Pest Control Operators' Conference, January 16-29, at Lafayette, Ind.

The early part of January there will be held the Annual Banquet, when it is expected that several guest speakers will take part.

California Pest Control Association, Inc.

The major activity of the California Pest Control Association is being centered around preparations for the Pacific Coast Pest Control Operators' Conference, which is to be held February 20, 21 and 22, at the University of California at Berkley, Calif. Prof. William B. Hermes, head of the Department of Entomology, and Mr. George A. Rader, representing the Association, are in direct charge of arranging the details of the program. The California Association has extended an invitation to all pest control operators who find it possible to attend, regardless of whether or not these operators engage in business in the state of California. Invitations have been extended to Prof. J. J. Davis of Purdue University, and William O. Buettner, Secretary of the National Association to attend and take part in the conference program. This Second Annual Conference will have an exceedingly strong faculty, and the detailed program will appear in the February issue of "Pests."

Further study and work is being done in connection with revision of parts of the California Structural Pest Control Act. Primarily the amendments have to do with clarification as to scope and definitions rather than many changes.

Emphasis is also being placed on the matter of proper bookkeeping system. Good bookkeeping of all business transactions will help solve many little unknown problems, and thus provide a proper means for determining the charges that should prevail on different jobs. Attention is called to the various taxes, licenses, and permits that are in effect in California, and which should properly be made a part of the overhead expenses, but altogether too frequently, are merely thrown into no special classification, except that the individual operator discovers at the end of the year that he has taken these items from his own pocket, when there should have been profit in place of these expenses.

An interesting list of the various taxes, permits, etc., that are involved are as follows:

1. National Social Security Tax.
2. State Unemployment Tax.
3. State Retail Sales Tax.
4. Gasoline—National and State—Taxes.
5. National and State Income Taxes.
6. National, State and City Property Taxes.
7. State Structural Pest Control Establishment License.
8. State Structural Pest Control Operators' License.
9. City Exterminators' and/or Fumigators' License.
10. Building permit for each Termite job.
11. Economic Poison License if any chemicals are mixed.
12. State Compensation Insurance.
13. State Contractors' License.

Following the Berkeley Conference, there will be held the Fifth Annual Convention of the California Pest Control Association at Oakland, Calif., on February 23 and 24.

California Pest Control Association, Inc.

District No. 7

The regular monthly meeting of District No 7 of the California Pest Control Association was held at Ada's in Burlingame, Calif., on December 12. President Ernie Mills presided. The meeting was largely confined to routine business, and plans for the coming Pacific Coast Pest Control Aperators' Conference, to be held in February.

On January 12, there is to be held a Ladies' Night in San Francisco. A committee, composed of George Peterson, V. H. Montgomery, and Ernest G. Mills, is in charge of the program. The members of the neighboring district in Oakland are to be invited to attend Ladies' Night.

Those present at the December 12th meeting were:

E. G. Mills, President, San Francisco.
A. D. Parsons, 1st Vice-President, San Mateo.
George Peterson, Treasurer, San Francisco.
Robert E. Hackley, Palo Alto.
S. L. Strang, San Francisco.
V. H. Montgomery, San Francisco.

Associated Pest Control Operators, Inc.

The Associated Pest Control Operators, Inc., of Los Angeles, is holding its first anniversary celebration, and in connection

(Continued on Page 20)

Thallium Sulfate

Kills
Rats
Mice
Ants

Thallium Sulfate, a 100% tasteless and odorless white powder, is the one material which is highly effective in the control of rodents (rats, mice, etc.) as well as ants. Manufacturers of insecticides should check up on the advisability of using this material in their finished products. Exterminators all over the country are finding Thallium Sulfate to be highly efficient when used in baits in accordance with our directions.

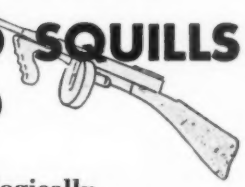
We have a considerable amount of information dealing with this important insecticide raw material. Why not ask us for complete details?

Thallium Sulfate is packed in 1 and 2½ lb. bottles and cans, and in 50 lb. boxes. Other Thallium salts are also available.

Ore & Chemical Corp.
80 Broad Street New York

RAT ENEMY No. 1

. . . PENICK RED SQUILLS



POWDERED (oven dried) and LIQUID - RODINE

Kills rats effectively. Physiologically standardized and tested for uniform toxicity.

PENICK PYRETHRUM—high pest-destroying potency; granulated and powdered (extremely fine).

PENICK ROTENONE—for technical use—90% pure or chemically pure. Rotenone Solution, ready for immediate use, steps up pyrethrum spray toxicity.

Send for Descriptive Booklets

S. B. PENICK & COMPANY
132 NASSAU STREET NEW YORK, N. Y.

therewith, there will be conducted an educational program. This affair is to take place on Thursday, Friday, and Saturday, January 19, 20 and 21, at the Pacific Electric Theater Building in Los Angeles.

The plans call for interesting lectures, as well as a study of methods, materials, and ethics of the pest control industry. Opportunity will be given for an exchange of opinions, and a discussion held on the practical solutions to the everyday problems of the pest control operator. Moving pictures of an educational nature will also form a part of the program.

The entertainment side has not been neglected, and will be featured by a banquet followed by dancing.

Registration fee for the three days, including the entire program, and all entertainment, will be $5.00 for each man, and $2.50 for each lady.

National Association Notices

Members are urged to call on each other, especially when traveling about the country. A permanent office is not required, but for those firms visiting New York City, it is urged that the secretary be called at either South 8-4120 or South 8-4121 and appointment will be arranged.

Communication No. 132: A six pages' membership service letter, with which was included the minutes of the Board of Directors' meeting, held at Omaha, Nebraska. Attention was called to the Federal Food and Drug Act. This letter was sent to the membership on December 16.

Communication No. 133: This membership service letter was also sent to the industry in general in several states, because of the emphasis about the Purdue conference to be held January 16 to 20 at Lafayette, Indiana. A cordial invitation is extended to all owner pest control operators from all states, who might desire to attend this conference. This letter was sent on December 22.

Communication No. 134: Usual membership service letter of several pages that included the complete list of officers and committee assignments for the ensuing year, as well as a treatise in connection with advertising. This was sent to the membership on December 24.

Communication No. 135: Usual membership service letter, with items of interest, sent to the membership on December 29th. This included the Committee on Legislation report.

Statement for 1939 Dues: While several have already paid their 1939 dues, the formal statements were sent on December 31st to all. Please pay promptly.

Communication No. 6-A: Official letter to the Board of Directors, covering routine business of the association, sent to the directors on December 16.

Communication No. 6-B: Official letter to Board of Directors in connection with association business, and sent to the members on December 28.

Pest Control Operators' Conferences: The outstanding conferences for the month of January will be held at Purdue University, January 16 to 20, and called the Purdue conference. Similar conference will be held at the University of Louisiana at Baton Rouge, January 30, 31, and February 1. These conferences are open to pest control operators. More details are given by way of special letters and articles that appear in this issue of "Pests."

Membership: For the benefit of those firms which are desiring to become affiliated with the association, it is urged that application be made immediately, so as to derive the full benefit of the yearly dues. The dues for a period of one year are $10.00. There is no pro-rating of dues at any time for the first nine months of any year, so that one coming into the association at the first part of the year is assured of the full benefit of the membership service letters. Applications may be had from the secretary of the association.

National Seal: It is gratifying to notice the general use of the seal on letterheads, advertising and classified telephone directory advertising. If you have not ordered your cut, do so immediately. Cuts are provided in two sizes, ½x¾" and ¾"x1". The charge is $1.00 per cut or if two or more are ordered at the same time, $1.00 for the first cut and 50c additional for the extra cuts. No orders filled without check or money order accompanying. All orders for seals must be made directly to the secretary of the association at 3019 Fort Hamilton Parkway, Brooklyn, New York.

Rats Are Our Friends

CONFUSING indeed is the announcement that the Rodent Control Service is ready to assist farmers in fighting the rat menace. J. M. Hill of the United States Bureau of Biological Survey is quoted out of College Station, Texas, as saying that rats are responsible for a loss of 2,000,000 bushels of corn per year. Apparently Mr. Hill recommends traps, poison, ratproofing farm buildings and other measures calculated to bring rats to an untimely end. But all this is extremely hard to understand, in view of the great services rendered to American agriculture by rats.

It would seem that Mr. Hill has not heard of the new AAA which is designed to cut down corn production in Texas—a State which has never exported any considerable amount of corn and which ordinarily hasn't enough corn for its own use. Mr. Hill ought to read the newspapers and find out that the purpose of the Government as a whole is to penalize most sternly those farmers who produce too much corn or grain. If he will look into the matter he will see that rats are on the same side of agricultural economy as Mr. Wallace and his AAA are.

Let us put it simply, so that even a scientist of the United States Bureau of Biological Survey can comprehend the logic and justice of the agricultural program of Washington at this time. If the rats ate half the corn yield of the United States that would cut down the marketable crop by 50 per cent, wouldn't it? Certainly. Moreover, if the crop is so reduced the remaining half would probably sell for more than the whole crop would have sold for? Probably. Well, then, instead of killing the rats, the biological surveyors ought to get out their gadgets and their drafting boards and find out how to breed rats, more rats, bigger rats, hungrier rats, rats that eat night and day, rats that eat corn and oats and wheat and cotton and everything else. We trust Mr. Hill gets in line.

*The Dallas Journal—Dallas, Texas.

Termites Cause Fire

An interesting incident has recently been commented upon by one of our New York City termite control operators. Answering an urgent request, William J. Shrimplin of the Rose Exterminator Co. made an inspection of a home about which a report was made that termites had caused a fire.

Inspection and investigation showed that this home was in the process of being painted. The painters, who were using a blow torch at the front portion of the building near the entrance, suddenly found that a fire spread completely along the sill, and only the rapid work of the painters preventer a serious fire. That portion of the porch upon which the blow torch was being used proved to be nothing more than the shell of a sill beam that naturally had no base whatsoever, but merely the outer shell so prevalent when there is a termite infestation. All outward appearances of the sill would indicate that the sill was in good condition, but those who are engaged in termite control realize that this is a very frequent condition as far as any outward appearances of termites being in evidence.

Mention of this experience is intended to be of help to termite control operators in general, who might well consider the incident as something to be used in connection with their sales portfolio.

A Tent for Fumigating

An ingenious arrangement has been developed for fumigating rugs, unholstered chairs and sofas, drapes, blankets, what you will, at home. Equipment consists of a transparent rubber composition tent big enough to cover a sofa or three chairs and other articles laid beside them on the floor. The tent is stuck to the bare floor with adhesive tape. It thus forms an air-tight chamber under which is placed a can of fumigating gas that is supposed to kill all larvae. One exposes furniture to this treatment for twenty-four hours. The equipment can be used again and again, with replacements of the cans of gas.

Butterfly Hordes Flutter Over Bay

Monterey, Calif. — Millions of Monarch butterflies were fluttering southward across Monterey bay recently and clustering thickly on branches of Pacific Grove's famous "butterfly trees."

Those who have watched the annual movement claim the fragile creatures migrate each autumn from as far north as Alaska. Each spring they take wing and move northward.

While here the butterflies spend nights clinging in masses to trunks and branches of a grove near Asilomar. Days they forage for food about the Monterey peninsula.

The vanguard of main flight arrived and their number was estimated in the millions. They darkened the sky as they converged on their goal.

"The old forget, the young don't know."

Study the Advertisements Carefully and Patronize Our Advertisers . . .

WHAT'S NEW IN PEST CONTROL-PERSONALS

Announcement has been made that R. L. (Spray) Moore of Sacramento, Calif., has been appointed to the California Structural Pest Control Board. Mr. Moore has been active in Sacramento and has given considerable cooperation with the Chamber of Commerce. Mr. Moore will fill the vacancy created by Mr. Treppe.

Nathan N. Sameth is enjoying his annual winter vacation in Florida. Mr. Sameth is one of the pioneers of the exterminating industry in New York City, and is president of the Sameth Exterminating Co. David Klein of the Allied Exterminating Co. of Brooklyn, N. Y., is also in Florida.

Dr. and Mrs. Thomas E. Snyder of New Orleans, La., enjoyed the Christmas holidays with Mrs. Snyder's sister in the northern part of New Jersey. Dr. Snyder took occasion to visit with several of the pest control operators while on this pleasant holiday visit and is looking forward to attending the Pest Control Operators Conferences at Purdue and University of Louisiana.

At the recent meeting of the Eastern Branch of the American Association of Economic Entomologists at Baltimore, S. W. Bromley and E. P. Felt gave an interesting and valuable contribution on the damage to trees by the New England hurricane and its effect on insect populations and insect troubles. The uprooting and injury to trees following such a storm produces conditions analagous to fire, since it weakens trees and makes them more susceptible to insect injury, especially borers. Of major importance is the case of bark beetles which may act as carriers of the Dutch elm disease.

Southern California firms report a 20-week bowling tournament which created considerable interest. It is said that the various firms battled to a "rousing and most exciting finish." A beautiful bronze trophy was awarded to the winner, the Western Exterminating Co. of Los Angeles. The final standing of the teams are as follows:

First Place: Western Exterminator Co., Los Angeles.

Tied for Second Place: U. S. Termite Control Co., Pasadena; Master Pest Control Service, Los Angeles.

Tied for Third Place: J. M. Miller Pest Control System, Hollywood; Hollywood Termite Control Co., Hollywood.

Fourth Place: California Termite Control Co., Los Angeles.

Joseph E. La Gasse Co., are now located at their new quarters, No. 335 Massachusetts Ave., Boston, Mass. In conjunction with their office and laboratory, they have entered the retail field with a complete line from fly swatters to mouse traps.

In the August issue of the Larvacide Log (published by Innis, Speiden and Co.), Dr. A. W. Morrill describes a convenient graduate which he has found to expedite measuring chlorpicrin and avoids the uncomfortable moments experienced when an open graduate is used for the purpose.

Leonard Y. Goldman of the New England Exterminating and Fumigating Co. of Providence, R. I., was found roaming around New York City. It is said that he could not resist the temptation to see Hellz-a-Poppin. No business in Providence during the holidays according to Leonard. All enthusiastic about Purdue Conference Course.

A recent mailing piece starts off with the sentence, "Do you still have any shy, bashful roaches playing peek-a-boo with your chef?" The purchasing agent having a good sense of humor sent the letter to the pest control operator, none other than Ed Arnott of Indianapolis, Ind., who provides regular services by placing a circle around the sentence and asking, "Do I?" Ed Arnott still has the job and hence the conclusion is simple—"No, the chef is not bothered with shy, bashful roaches."

Oscar G. Buettner, of Brooklyn, N. Y., took time out again recently to enjoy another of the cruise trips to Honduras and other Central American points of interest. Walter McCloud is still trying to sell Oscar's son "Bill" on the idea of taking a similar trip and continuing to South America. Looks as if Walter can no long call "Bill," "Pop."

Do all Californians send their citrus fruit to other states but purchase Arizona grape fruit, etc., when they really want good fruit? Page L. R. Alderman of Pasadena and have him answer that one.

Kills All Mice

Calico Seed is a ready-to-use preparation that lures and quickly kills mice. Absolute Money-back Guarantee. No objectionable odors. Used in foreign countries and coast to coast by the largest Public Warehousemen, Seedmen and Public Exterminators. Highly recommended.

Industrial Size: 8-ounce pour spout can. 10 Pounds, $4.00; 25 Pounds, $7.00; 50 Pounds, $12.00; 100 Pounds, $22.00. All Delivered.

SATISFACTION GUARANTEED
OR MONEY REFUNDED

The Bagnall Company
STATION A KANSAS CITY, MO.

"POSITIVE" - "SAFE" and "SURE"
USICO SILVERFISH CONCENTRATE

"FACTS"

KNOWN WORLD WIDE!

(1) It will exterminate all Silverfish in building completely and properly treated within 40 days; ONE TREATMENT will protect against reinfestation for THREE YEARS.

(2) Harmless to human beings and animals, simple to apply, no tearing up or marring woodwork, yet placed away from any chance of removal. No inconvenience to tenants whatever.

(3) One pound will treat completely — three 2-room apartments, two 3-room apartments, or a basement room 20x20.

(4) It has fulfilled every claim made for it, under the worst conditions known. Write for testimonials.

(5) "NEW LOW PRICES"— $1.00 per pound, f.o.b. Seattle, Washington. Minimum amount 10 pounds. Shipped express.

(6) *Don't envy the exterminator who can guarantee the above performance, be one!!!*

U. S. INSECTICIDES CO.
412 Hoge Building Seattle, Washington

WRITE FOR THESE BOOKLETS

The latest helpful informative service literature will be sent to you without cost or obligation.

Please note, however, that you must request each booklet on a separate letterhead, though they may all be mailed in the one envelope to 514 East 14th St., Kansas City, Mo.

MOTH PROOF

Folder of unsolicited letters showing effectiveness of this moth proofing preparation. Folder discusses new odorless, stainless, non-explosive exterminator for moths, tow bugs, tobacco worms, carpet beetles, linen worms, and other similar pests.

FREE COPY MAY BE HAD BY ADDRESSING TERMAX c/o PESTS.

THALLIUM SULPHATE

Interesting data which discusses Control of Rodents with Thallium Sulphate—with suggested formula; Control of Ants with Thallium Sulphate with suggested formula with additional information on Thallium Sulphate as a rodent poison.

YOUR FREE COPY MAY BE HAD BY ADDRESSING ORE c/o PESTS.

CATALOGUE AND PRICE LIST

32 pages, covering data on Insect Control of the house, garden and farm; essential oils and perfume bases for fly, mosquito and insect sprays; weed killer; atomizers, sprayers, dusters, dust masks, respirators.

YOUR FREE COPY MAY BE HAD BY ADDRESSING FLUORIDE c/o PESTS.

INSECTICIDE GUIDE

Twenty-eight page pamphlet discussing facts you should know about pyrethrum flowers; dilution table for plant sprays; dilution chart pyrethrum soap; how to mix effective baits; derris root, etc. Of special interest to jobbers and exterminators.

WRITE FOR YOUR COPY BY ADDRESSING HOPKINS c/o PESTS.

HOW TO KILL RODENTS

Pamphlet discussing gas ball rodent destroyer; tubular rodent destroyer; new patent traps; explosive devices; squirrels and bubonic plague; ground squirrel control; black widows, tarantulas, wasps, ants, etc.

FREE COPY MAY BE HAD BY ADDRESSING HITT c/o PESTS.

SPRAYERS

Seventy-two page colorful catalog; illustrated; showing sprayers for everybody everywhere.

FREE COPY MAY BE HAD BY ADDRESSING HUDSON c/o PESTS.

SOLVAY PRODUCTS

48-page booklet in colors and illustrated, covering their entire line of Alkalies and Special Products, with a special section dealing with Para-Dichlorobenzene and Ortho-Dichlorobenzene.

FREE COPY MAY BE HAD BY PEST CONTROL OPERATORS. WRITE SOLVAY, c/o PESTS.

POWER SPRAYERS

Folder describing sprayers for termite control work.

COPY MAY BE HAD BY ADDRESSING HARDIE c/o PEST.

INSECTICIDE SOLVENT:

This is a descriptive folder covering high lights on volatility, refining process, specifications, killing power on Insecti-Sol, an insecticide spray and stock spray solvent and other qualities of interest to manufacturers of fly sprays. Insecti-Sol claims unusual advantages for use by pest control operators in the manufacture of their bed bug preparations.

DESCRIPTIVE LITERATURE WILL BE MAILED FREE TO READERS ON REQUEST. WRITE TO "PENNSYLVANIA," c/o PESTS.

SANITARY CHEMICALS

50-page catalog of interest to recognized dealers and jobbers who are interested in the subject of private label merchandising, for such products as deodorant blocks, insecticides, such as fly sprays, bed bug and roach sprays, cattle sprays, mill and warehouse sprays, vaporizer sprays, moth sprays, roach powders, ant insecticides, rat poisons, agricultural sprays, mosquito larvicide. liquid deodorants such as chlorozif, formaldehyde sprays, pine deodorants, drip machine fluids, kilan-odor, theatre sprays, etc.

FREE COPY TO INTERESTED DEALERS AND JOBBERS. WRITE FULD, c/o PESTS.

FORMULA HINTS FOR THALLIUM SULPHATE

Containing typical formulae for Rats and Mice; for Ground Squirrels and Rats; for Mice; for Red Ants; for Rats. What to do in case of Thallium poisoning. Additional formulae for Rat Bait (worked out by U. S. Department of Agriculture Bureau of Biological Survey). Information as to type of vessels to be used for dissolving Thallium Sulphate. Also formula for deodorant for Bed Bug Spray and Fly Spray. Data on Ant Control with Sodium Arsenate Crystals.

FORMULA HINTS SENT FREE ON REQUEST. WRITE PFALTZ, c/o PESTS.

NEW BULB FOR PEST CONTROL OPERATORS

If you've ever been confronted with the problem of obtaining a properly balanced bulb with a natural easy grip to eliminate palm cramp the manufacturers of the Centrobulb claim they have embodied this feature in their new bulb. In addition they claim it is guaranteed seamproof with a nozzle made of heavy rustless metal which they guarantee not to crack even under pounding. It has a deep cut thread and won't work loose with a larger opening for instant filling with a metal screen to prevent clogging. The nozzle base is permanently attached to bulb.

IF YOU'D LIKE FURTHER PARTICULARS ABOUT IT PLEASE WRITE CENTRAL, c/o PESTS.

"Home is the harbor of the heart."

"A false prophet always wants full profit."

HEADQUARTERS
FOR
WIZO RAT PASTE
FOR CONVENIENT AND RAPID RESULTS
Kills rats and mice. Contains a deadly poison. Spread thinly over bread, cut into squares and place wherever rodents appear. Rats leave premises and die outside.
25 lb. cans @ 45c per lb.
10 lb. cans @ 50c per lb.
5 lb. cans @ 55c per lb.
1 lb. cans @ $6.00 per dozen
½ lb. cans @ $3.60 per dozen
F. O. B. New York, N. Y.
Write for our catalog describing our complete line of exterminating and sanitary chemicals.
ELKAY PRODUCTS CORP.
323-327 West 16th Street New York, N. Y.

THALLIUM SULPHATE
DELIVERIES FROM SPOT STOCKS
JUNGMANN & CO.
INCORPORATED
Industrial and Fine Chemicals-Raw Materials
157 CHAMBERS STREET
TEL. BARCLAY 7-5128-30 NEW YORK CITY

Southern Pest Control Operators' Conference

Baton Rouge, Louisiana, January 30, 31, February 1, 1939

IN COOPERATION with interested entomologists and the National Pest Control Association, the Southern P. C. Operators will hold their first annual conference at the University of Louisiana, at Baton Rouge. The following program gives the worthwhileness of the subjects to be discussed and genuine opportunity that awaits those who have the foresightedness to attend.

PROGRAM

First Day, Monday, January 30, 1939

8:30 A. M.

Registration — Room 102, South Agricultural Building.

Chairman, O. W. Rosewall

10:00 A. M.—12:30 P. M.

Welcome—F. C. Frey, Dean, College of Arts and Sciences.

"Facilities of Louisiana State University for Future Conferences"—Wm. H. Gates, Head Department of Zoology and Entomology.

"Louisiana Horticultural Commission and Louisiana Pest Control Operators"—W. E. Anderson, State Entomologist; Secretary Louisiana Horticultural Commission.

"The National Pest Control Association"—Wm. O. Buettner, Secretary, National Pest Control Association.

Results of Pest Control Operators' Conferences.

Chairman, E. O. Eddy

2:00 P. M.

"Morphology of Insects"—J. H. Roberts in charge. Assisted by C. L. Stracener and graduate students.

3:30 P. M.

"Rodents and Their Control"—George Lowery and L. S. Bridges.

7:00 P. M.

Symposium—Conducted by Wm. O. Buetner.

Second Day, Tuesday, January 31, 1939

Chairman, Wm. H. Gates

9:00 A. M.—12:30 P. M.

"Nature of Chemicals"—(Structure, surface tension, wetting, penetration, organic and inorganic substances, etc.)—E. A. Fieger.

"How Insecticides Kill"—L. O. Ellisor.

Fumigants.

"Inorganic Chemicals, Mineral Oils, Coal Tar Oils, Miscellaneous Poisons"—E. O. Eddy.

"Botanical Poisons"—C. E. Smith and L. O. Ellisor.

Chairman, E. R. Barber

Noon—1:00 P. M.

Round Table Symposia:

"Cockroaches"—J. H. Roberts and L. S. Bridges.

"Clothesmoths, Carpet Beetles, Moth-proofing, etc."

"Bees"—W. Whitcomb, Jr.

"Fleas and Ticks"—L. O. Ellisor.

"Bats"—Wm. H. Gates.

"Silverfish, Booklice, Attic, etc."—B. R. Osterberger.

"Flour Beetles, Larder Beetles, Rice Weevils"—C. L. Stracener.

7:30 P. M.

Banquet—W. E. Anderson in charge.

Third Day, Wednesday, February 1, 1939

Chairman, J. H. Roberts

9:00 A. M.—12:30 P. M.

"Termites and Their Control"—Dr. Thos. E. Snyder.

"Powder-Post Beetles and Their Control"—H. R. Johnston.

"Biology of Lyctus Beetles"—M. B. Christian.

Chairman, C. E. Smith

2:00 P. M.

"Ants and Their Control"—E. R. Barber.

3:30 P. M.

"The Future of the Southern Pest Control Operators' Conference at Louisiana State University"—O. W. Rosewall.

3:45 P. M.

Business Meeting — E. R. Barber, Chairman; Miss Pauline Anderson, Secretary.

"A square man does not need a label."

A NON-POISONOUS RAT KILLER

15c PER POUND IN ONE-POUND TIN CANS

For Safety, Effectiveness and Economy

—USE

SUR-RID RAT KILL

Try It—It Saves Time and Money

SUR-RID Rat Killer is tested in our own laboratory on both wild and tame rats and we GUARANTEE the Killing Power.

SUR-RID Rat Killer contains meat, cereals, vegetables and just the right amount of a tested killing agent. It is especially appetizing to rats and mice as there is only an odor of fresh meat and vegetables and there is no raw odor of chemicals; four distinct lures, MEAT, FISH and CEREAL and CANTALOUPE, packed either assorted or of one kind to a case, which contain three dozen one-pound cans.

Due to the increase in the sale of this Rat Killer, we are reducing the price as follows:

	Per Dozen
Three Dozen Lots, labeled	$2.00
Gross Lots, labeled	1.90
Gross Lots, no label	1.80
The half-pound size, packed five dozen to a case	1.25

Freight Prepaid on Gross Lots, Less Than Gross Lots F. O B. St. Louis, Mo.

SUR-RID PRODUCTS COMPANY

Manufacturers

(FORMERLY REAL EXTERMININATING PRODUCTS CO.)

455 PAUL BROWN BLDG., ST. LOUIS, MO.

FACTS

About Per-Mo Permanent Mothproof Liquid

Per-Mo is easily applied to rugs, carpets, over-stuffed furniture, drapes, blankets, wearing apparel and other woolen articles. Chemists' tests prove that Per-Mo becomes an integral part of the fabric, the same as a dye. Its efficacy is not impaired by dry-cleaning, washing, exposure or use. Even years after the application of Per-Mo moths cannot injure any fabric so treated.

WHAT SOME USERS OF PER-MO SAY

We are proud to say that we have used quite a bit of the Per-Mo mothproof material, and so far, have found it to be very satisfactory.—Pest-Control Operator.

Since using Per-Mo in this building five years ago we have never seen any sign of moths. We cannot recommend your product too highly.—Apartment Manager.

Since having my entire house treated with Per-Mo I've had no fear of moths whatsoever, and it has been a joy and help. I can most sincerely recommend Per-Mo.—Housewife.

Per-Mo Mothproof is a colorless and odorless liquid, that is applied to any woolen fabric with a spray-gun, either electrically or hand powered. Write for full particulars.

Salesmen and Jobbers Write for Exclusive Territory.

PER-MO MOTHPROOF CO.

3729 Virginia., Dept. M. Kansas City, Mo.

Additional Patents Relating to Pest Control

By DR. R. C. ROARK

EDITOR'S NOTE: *This service is provided through the Department of Agriculture for the purpose of bringing to the attention of those interested such matters that may be of assistance to the industry. The Department of Agriculture assumes no responsibility for the merits or workableness of any of the inventions mentioned. Copies of all patents can be obtained for 10c (no postage stamps) sent to the Patent Office, Washington, D. C. When placing orders be sure to note the number of the patent, the date, the name of the patentee and the subject of the invention.*

2,123,995 (July 19, 1938; appl. May 2, 1935). INSECT POISON CONTAINER. Robert L. Harroun, Miami, Fla.

2,124,147 (July 19, 1938; appl. Aug. 14, 1937). ADVERTISING FLY CHASER. Martin J. Murphy, Spalding, Nebr. This device is adapted to be attached to a screen door or similar closure to be operated incidental to the opening and closing of the door.

2,124,227 (July 19, 1938; appl. Nov. 24, 1936). TRAP. Michael Bilinski, Ottawa, Ontario, Canada. A trap for rodents is described.

2,124,307 (July 19, 1938; appl. June 18, 1937). METHOD OF DETERMINING THE AMOUNT OF SULPHUR IN MIXTURES CONTAINING THE SAME. Robert G. Mewborne, Albuquerque, New Mexico, and John F. Les Veaux, Middleport, N. Y.—Niagara Sprayer and Chemical Co., Inc., Middleport, N. Y. The patentees claim the method of determining the amount of suspended elementary sulphur in an aqueous medium containing the same which comprises chemically reacting a representative sample of the said medium containing the suspended sulphur with the hydroxide of an alkali metal to convert the elementary sulphur substantially completely to the monosulphide of the alkali metal and subsequently titrating the solution of the monosulphide thus obtained by the addition of standardized iodine solution thereto to convert the monosulphide to alkali iodide and elementary sulphur, using a soluble metal salt of nitroprussic acid as the indicator of the end point of the titration, the temperature of the monosulphide solution during said titration being maintained at about 110° F., whereby the weight of elementary sulphur in the said sample may be calculated from the weight of iodine consumed in the said titration, using for this calculation the ratio of iodine to sulphur by weight corresponding to that indicated in the following equation: $Na^2S+I^2=2NaI+S$. This invention relates to the estimation or determination of the amount of elementary sulphur in mixtures containing the same and more particularly to the amount of elementary sulphur in aqueous media containing the sulphur in the form of finely divided particles in suspension therein and adapted for external application to animals, particularly sheep, goats and cattle, for controlling insect pests to which such animals are normally subject.

2,124,400 (July 19, 1938; appl. Jan. 3, 1935). INSECTICIDAL, FUNGICIDAL, DISINFECTANT MATERIAL. Leon C. Heckert, Pittsburg, Kans., and Charles H. Peet, Bristol, Pa.—Rohm & Haas Company, Philadelphia, Pa. The patentees claim as a new composition of matter an alkyl substituted cyclohexyl thiocyanate.

2,124,494 (July 19, 1938; appl. Nov. 20, 1936; in Germany Sept. 8, 1931). METHOD OF IMPROVING VERMIN EXTERMINATING COMPOSITIONS AND THE RESULTING COMPOSITIONS. Karl Memminger, Magdeburg-Sudost, Germany; Fahlberg-List Aktiengesellschaft Chemische Fabriken, Magde-Sudost, Germany. A vermin exterminating composition which evolves hydrogen sulphide and carbon-monoxide upon being burnt, comprises sulphur, a solid combustible carbon containing substance, a substance which is able to give off oxygen and 4% to 10% of at least one substance selected from the group consisting of liquid oils and fusible fats of animal, vegetable and mineral origin.

2,124,782 (July 26, 1938; appl. Sept. 15, 1933). INSECTICIDAL OIL SPRAY. Hugh Knight, Claremont, Calif. Emulsoids, Inc., San Francisco, Calif. An anti-parasitic oil composition for application in emulsified form to sensitive foliage comprises a refined petroleum white oil containing in solution about 5% of a mixture of about three parts by weight of aluminum naphthenate and one part by weight of glyceryl oleate.

2,125,377 (Aug. 2, 1938; appl. June 27, 1932). CYANIMIDE MANUFACTURE. Harry J. Hosking, Brooklyn, N. Y.—E. I. du Pont de Nemours & Company, Wilmington, Del. A process for the production of sodium cyanide comprises contacting the vapor of a hydrocyanic acid forming compound at a temperature of 300-450° C. with an active form of the corresponding carbonate in the solid state, said carbonate having been rendered active by heat treatment.

2,125,595 (Aug. 2, 1938; appl. Jan. 26, 1937). GOPHER TRAP. John Tenbrook, Sepulveda, Calif.

2,125,918 (Aug. 9, 1938; appl. March 16, 1937). PROCESS OF PRODUCING WOOD PRESERVATIVE. Jacqueline E. Harvey, Jr., Robert H. White, Jr., and John J. White, Atlanta, Ga.—one-half to Southern Wood Preserving Company, Atlanta, Ga., and one-half to Jacquelin E. Harvey, Jr., Atlanta, Ga. A process of producing wood preservative impregnant of the creosote oil type from a mixture of tar fractions with boiling points above 210° C. and with coke residue in excess of 10%, comprises: hydrogenation of the mixture with temperature, pressure, and time of reaction so controlled as to produce not more than 5% of fractions distilling at 210° C.; by preferential action of said hydrogenation on the high boiling point fractions reducing the percentage of coke residue in the mixture and condensing the range of boiling points of fractions of the mixture toward the low boiling point limits thereof; and by effect of hydrogenation increasing the toxic properties of all fractions.

2,126,261 (Aug. 9, 1938; appl. July 15, 1937). METHOD OF TREATING FUR. Jenny Jacobs, New York, N. Y. A method of fur treatment consists in working a comminuted, relatively soft, solid fibrous material through the fur by manually combing said material into and through the fur, said material being impregnated with a hide softening, a pest control and glaze coating agents. The treatment agent employed in accordance with the present invention, comprises a comminuted or granular base fibrous material, such as shredded leather, or ground asbestos fibers. The base material is mixed with a hide or skin softening and preservative agent such as pine oil, a disinfectant or germicide such as phenol, and a glazing agent such as casein.

2,126,311 (Aug. 9, 1938; appl. June 15, 1937). EXTENSION HANDLE FLY SWATTER. William Cowen, Brooklyn, N. Y.

2,126,512 (Aug. 9, 1938; appl. March 4, 1937). RODENT AND ANIMAL TRAP. Fremond D. Stemen Linngrove, Ind.

2,126,664 (Aug. 9. 1938; appl. Aug. 19, 1936). ANTITERMITE PLATE. Raymond J. Reis, Louisville, Ky. An object of this invention is to provide a building structure embodying metallic plates arranged between the foundation and building frame beams, to the end that the frame breams are protected against attack by termites.

2,126,888 (Aug. 16, 1938; appl. May 26, 1936). SPRAY GUN NOZZLE. Alexander F. Jenkins, Baltimore, Md.

2,126,889 (Aug. 16, 1938; appl. March 1, 1937). SPRAY GUN. Alexander F. Jenkins, Baltimore, Md.

2,126,924 (Aug. 16, 1938; appl. Sept. 9, 1937). DUST SPRAYING DEVICE. William H. Rose, Jersey City, N. J.

(Continued on page 25)

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2,127,006 (Aug. 16, 1937; appl. May 23, 1936). SPRAYER. Joseph W. Patterson, Tulsa, Okla. Volume Sprayer Manufacturing Company, Inc., Tulsa, Okla.

2,127,090 (Aug. 16, 1938; appl. Feb. 26, 1937). INSECTICIDE. Lloyd E. Smith, Washington, D. C. An insecticide contains as its essential active ingredient 4, 6-dinitro-otolyl acetate.

2,127,189 (Aug. 16, 1938; appl. Aug. 31, 1937). SPRAY GUN. Angelo Scullari and Giuseppe Loccisano, Brooklyn, N. Y.

2,127,380 (Aug. 16, 1938; appl. April 14, 1937). INSECTICIDE AND FUNGICIDE. Frederick E. Dearborn, Washington, D. C.—People of the United States. The patentee claims an insecticide and fungicide comprising the complex products of the reactions between a solution of an alkali metal arsenite, an inorganic cupric salt and alkali metal salts of menhaden oil.

2,127,526 (Aug. 23, 1938; appl. Aug. 16, 1934). ACTIVE INSECTICIDE AND FUNGICIDE. Walter C. O'Kane, Durham, N. H. A fungicide or insecticide composition contains a gylceride oil, an oil soluble insect poison, a hydrocarbon distillate, the hydrocarbon components of which are of substantially uniform molecular size, and an oil soluble emulsifying agent, the constitutents being present in proportions to yield of unstable dispersion in water.

2,127,731 (Aug. 23, 1938; appl. Dec. 14, 1936). SPRAYING APPARATUS. Stanley A. Hayes, Berkeley, Calif.

2,127,879 (Aug. 23, 1938; appl. Jan. 29, 1937; in Germany Feb. 7, 1936). TEXTILE OR THE LIKE PESTPROOFING MEDIUM AND USE. Henry Martin, Basel, Switzerland—J. R. Giegy S. A., Basel, Switzerland. A devitalizing composition of matter for combatting pests of the insect class contains as its essential active ingredient alpha-aceto-benzotetronic acid.

2,127,963 (Aug. 23, 1938; appl. Jan. 17, 1934). MOTHPROOF CABINET. George Rottman, Brooklyn, N. Y.

2,127,975 (Aug. 23, 1938; appl. Dec. 24, 1936). FUMIGATING OR DEODORIZING DEVICE. Archibald Kemp, Maplewood; German Winckler, Bloomfield, and William Carl Walton, West Orange, N. J.

2,128,143 (Aug. 23, 1938; appl. July 29, 1937). AUTOMATIC RAT TRAP. Ernest L. Harrison, Portsmouth, Ohio.

2,128,175 (Aug. 23, 1938; appl. Feb. 19, 1937). FUMIGATION. John M. Baer, Chicago, Ill. — The Guardite Corporation. A method of accelerating the fumigation of an insect-infested product in bulk consists essentially of removing substantially all noncondensible gas from the product and then treating the insect-infested product with steam to produce a temperature of not more than approximately 100 to 130° F. and maintaining the temperature at this range from approximately 20 to 30 minutes, the higher temperature corresponding to the lower time, whereby the product is substantially freed from insect infestations.

2,128,189 (Aug. 23, 1938; appl. Oct. 16, 1937). MOTHPROOFING FABRICS. Lindley E. Mills and William W. Allen, Midland, Mich.—The Dow Chemical Company, Midland, Mich. A process for mothproofing woolen fabrics and other materials subject to attack by moths comprises treating such material with mono-phenyl-di(ortho-xenyl)-phosphate.

2,128,195 (Aug. 23, 1938; appl. March 20, 1937). AMINO-NITRO-CYCLOHEXYL-PHENOLS. Frank B. Smith, Midland, Mich.—The Dow Chemical Company, Midland, Mich. The patentee claims an amino-nitrocyclohexyl-phenol wherein the amino and nitro groups are attached to the benzene ring. These compounds have been found useful as insecticides. For example, when tested against Fifth-Instar Silkworms by the Leaf-Sandwich method for the estimation of median lethal dose, the median lethal dose of amino-nitro-2-cyclohexyl-phenol was found to be 0.056 milligrams per gram of insect body weight. The corresponding value for acid lead arenate ($PbHAsO_4$) was found to be 0.089.

2,128,579 (Aug. 30, 1938; appl. May 14, 1936. ANIMAL TRAP. Fred W. Corey, Tilton, N. H.

2,128,819 (Aug. 30, 1938; appl. Oct. 26, 1937). METHOD OF MELTING CYANIDES. Donald A. Holt, Niagara Falls, N. Y.—E. L. du Pont de Nemours & Company, Wilmington, Del. This process comprises heating sodium cyanide at a pressure not exceeding about 250 mm. Hg to a temperature of about 450-500° C. and then continuing the application of heat until said cyanide is melted.

Birds Eat Moths on Wing

Lancaster, Pa.—A Southern dinner—on the wind—was provided for barn swallows. The swallows, southbound, came upon thousands of Alabama argillacaca, migratory moths blown north by a high wind. The Southerners lost.

Gypsy and Brown-Tail Moths

The question before the Supreme Court of New Hampshire in the case of Gilman vs. City of Concord, 195 Atlantic Reporter, 672, was whether the city was liable if while engaged on highway in destruction of certain insect pests and in preserving trees, the city's agents and servants used a poison spray in such manner that it was deposited on adjacent land with resulting damage to poultry. By the statute in force, P.L. chapter 190, section 1, gypsy and brown-tail moths and their eggs, caterpillars, pupae and nests were declared to be public nuisances. Within certain areas, inclusive of highway locations, municipalities were required to destroy the nuisance as an imposed duty.

Sarah J. Gilman sued the City of Concord for poisoning plaintiff's hens. The declaration contained a count charging negligence, and another charging unreasonable use of the highway running along plaintiff's land. The trial court transferred the question of liability without a ruling. The Supreme Court held that the city engaged in exterminating such insect pests along the highway was engaged in a public "governmental function" since abatement of a nuisance is of general public concern. The court further held that the municipality could not be held liable for poisoning of the hens because of unreasonable use of the highway in absence of showing of defective construction of unsuitable maintenance of the highway, since the city committed no wrong unless it negligently prosecuted an undertaking for which the highway was properly used.

Was It Not?

"March was a tough month for the kangaroo rats and other rodent pests in New Mexico," announces an article just received from one of the busy press agents of the Interior Department. Secretary Ickes' men, it appears, distributed enough strychnine bait to kill the kangaroo rats, etc., on 130,000 acres of grazing land.

Since learned government experts estimate that eighty kangaroo rats will eat as much forage as a 750-pound cow or three sheep, the news from the Interior Department is good news. And yet, the way the press agent starts off his story inspires a certain amount of sympathy for the deceased. March was a tough month for practically everybody.

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ITEMS OF INTEREST

Won't Spend $4,920 to Eradicate Termites

Trenton, N. J.—The State House Commission declined today to grant Commissioner General Stephen H. Barlow $4,920 from the state emergency fund to eradicate termites, which, Mr. Barlow said, were eating through the floor of the state armories at Trenton and Elizabeth.

The commission turned the request over to Bernard Lamb, Commisisoner of Finance, with instructions that the Department of Agriculture be asked to exterminate the termites.

Does Spider Bark Before It Bites?

Melbourne, Australia — Entomologists, faced with a scientific problem of great import, sent for a species of barking spiders. The insects were flown 2500 miles for experiments to be conducted during the Northern territory Exposition.

The bark of the spider, they learned, resembled the chirp of a cricket.

Now they want to find out if it barks before it bites.

The Worm's Voice Is Now Imitated

Experts at the Department of Agriculture in Washington have discovered how to make a noise like a worm. They know how to capture worms—for fishing—by fiddling on sticks.

The sound made by the worm, they say, "can be closely imitated by moistening the lips well and then opening and closing them without moving the jaw."

The worm music is produced by driving a stick into the ground and stroking it across the top with another stick.

Chickens Kill Rats

Evansville, Ind.—Mrs. Victoria E. Wheeler used to worry about the rats getting her chickens but now the birds are taking care of matters.

She looked out in the chicken yard when she heard a commotion the other day and say a plucky young Rhode Island Red rooster dragging a rat around by the tail, while the other chickens pecked the rodent to death.—Cincinnati Times Star.

Be what your friends think you are.

Mice Meet Cause and Effect

Florence, N. J.—Two mice chewed a box of matches at William Brining's home with spectacular results. The matches fired Brining's hunting coat. The flames set off a box of shotgun shells in a pocket and the pellets scattered through the house. Brining and his family jumped from their beds and on the floor, below the burning coat, they found the riddled bodies of the mice. —Herald Tribune, December 16, 1938.

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(Classified)

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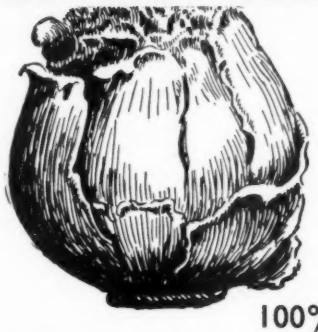

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